

FLORIDA HIGHWAYS

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Vol. VII

No. 9



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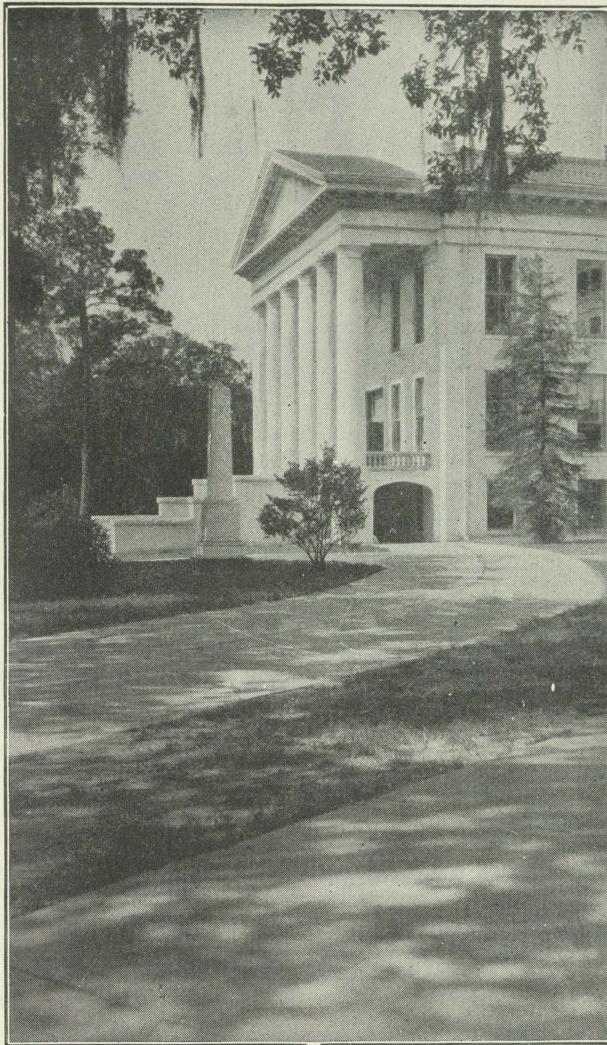
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Vol. VII
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HIGHWAYS

SEPTEMBER
1930

Six Florida Children Will Receive Awards

Winners in Essay Contest Conducted in Elementary Schools Throughout State Chosen by Superintendent of Public Instruction—Medals and Checks Will be Distributed

SIX Florida school children and one teacher have been notified that they have been declared state winners in the ninth annual safety essay and safety lesson contests conducted by the Highway Education Board of Washington, D. C., in co-operation with W. S. Cawthon, State Superintendent of Public Instruction, and local school authorities. The essay contest is open to all children of the fifth, sixth, seventh and eighth grades, fourteen years of age and under and the safety lesson contest is open to all elementary school teachers of the eighth and lower grades, both public and private.

Elizabeth Harrison, 622 E. Broward Boulevard, Ft. Lauderdale, a pupil of the Central Elementary School, wrote the best safety essay for Florida and

as first prize winner will receive a check for \$15.00 and a gold medal. In addition her paper will be entered in a national competition with the best essays submitted by pupils from other states, for one of the three national prizes. The first national prize consists of a trip to Washington with all expenses paid, at which time the winner is presented with a gold watch, while second and third prizes consist of gold watches only. The subject of the essay was: "What I am Doing to Set a Good Example in Safety on the Highways."

Miss Sally F. Hailey, 122 South Links Avenue, Sarasota, has been awarded first state honors in the safety lesson contest. The title of Miss Hailey's lesson was: "Teaching the Essentials of Street and Highway Safety." Although no State prize is

given in this contest, Miss Hailey will receive an honor certificate and her lesson will be entered in competition with the best lessons submitted by teachers in other states. In this contest there are also three national prizes, the first consisting of a trip to Washington with all expenses paid and a check for \$500, while second and third prizes consist of checks for \$300 and \$200, respectively.

Dorothy Stilwell, 649 Idlewyld Drive, Ft. Lauderdale, was awarded second state honors in the safety essay contest. As a result this pupil will receive a silver medal and a check for \$10.00.

There are four third prize winners for Florida, all of whom will receive prizes of \$5.00 and bronze medals. The third prize winners for Florida are: Anice Wismer of Central Elementary School, Ft. Lauderdale; Winton King, Grade 5, Brandon; Jackson Lamb of Central Elementary School, Ft. Lauderdale; and George Hammock, Route A, Clearwater.

The contests in which awards are being made have been conducted by the Highway Education Board in co-operation with the state educational authorities during the past nine years and preparations for the tenth annual highway safety campaign, to be held next spring, are already under way. During the contest last spring, more than 600,000 pupils and between 90,000 and 100,000 teachers participated.

Prizes awarded in the safety campaign are donated by the National Automobile Chamber of Commerce, to whom the names of the winning contestants have been certified by the Highway Education Board. Checks and medals for the six Florida pupils will be distributed as soon as possible. A total of 442 checks and the same number of gold, silver and bronze medals are distributed to state winners throughout the country, with the co-operation of state, city and county school authorities.

Highway Study Tours Appeal to Engineers

300 DELEGATES TO SIXTH INTERNATIONAL ROAD CONGRESS AT WASHINGTON WILL INSPECT AUTOMOTIVE TRANSPORTATION IN VARIOUS SECTIONS OF UNITED STATES—FINAL PLANS NOW BEING MADE

Three Trips, One Through South Atlantic States, One East to Boston and New England, and One Into Middle West To Be Undertaken After Close of Sessions In National Capital.

ANNOUNCEMENT recently by officials of the Highway Education Board indicated a prompt acceptance of invitations extended to selected delegates to the Sixth International Road Congress to participate in one of three post-congress tours that will be held for the purpose of studying at first hand highway transport conditions in various sections of the United States. The congress meets in Washington October 6 to 11, and the tours follow immediately afterwards.

Invitations have been extended to more than 300 of the leading highway engineers and administrators of the world. Delegates from more than sixty foreign governments will be present at the congress, and representatives of each of these countries are expected to be on one of the three tours which the highway organization is sponsoring.

In an effort to show the visitors from other lands highway conditions in latitudes relatively comparable to their own, the board is dividing the delegates into three groups of approximately 100 each. One of these will go east as far as Boston, another will journey south to Florida, while the third will go in a northwesterly direction as far as Minneapolis and Des Moines. The three tours will converge at Detroit for a three or four days' visit in this automobile manufacturing district.

Invitations are limited strictly to delegates, non-resident in the United States. The tours will last approximately three weeks, during which time the delegates will be the guests of the board and co-operating organizations, such as automobile clubs, local chambers of commerce and motor trade organizations, for purposes of transportation, subsistence and entertainment.

Norman C. Damon, who will be in charge of the southern tour, has left Washington for a last inspection of the southern itinerary and to make the final necessary arrangements. He will confer with of-

ficials of the several state highway departments in the states through which his tour will pass, with chambers of commerce and civic leaders everywhere.

The southern tour leaves Washington Monday, October 13, by bus, spending the first night at Natural Bridge, Va., after 90 miles of travel over improved highways in the latest type of automotive equipment. The second day will find the party at Winston-Salem, N. C., while other points to be visited in North Carolina include Wilkesboro, Morgantown, Asheville and Charlotte. From Charlotte the party goes to Charleston, S. C., and from Charleston to Savannah, Georgia, to continue their inspection of southern highways.

From Savannah the party will go by bus to Tallahassee, Florida, and in Florida will visit Ocala, Orlando, Winter Haven, Tampa, Fort Myers and Miami, as well as Palm Beach, inspecting highways and traffic conditions en route. They will entrain for Detroit Friday, October 24, from West Palm Beach, arriving in the automobile metropolis Sunday, October 26.

The delegates on the southern tour will be accompanied by a staff of interpreters, physicians, engineers, and journalists, as well as several observers from the Departments of State, Agriculture and Commerce.

A detailed itinerary of the tour follows:

FLORIDA ITINERARY, WORLD ROAD CONGRESS TOUR

Monday, October 20

6:00 p.m.—Arrive Tallahassee.

7:00 p.m.—Dinner and night at Hotel Floridan.

Tuesday, October 21.

7:30 a.m.—Breakfast at Hotel Floridan.

9:00 a.m.—Leave for tour of inspection of low cost roads in West Florida—travel by bus.

12:30 p.m.—Luncheon at Marianna, guests Marianna Chamber of Commerce.



Project 646—Road 10—Franklin County. Now Hard Surfaced.

- 1:30 p.m.—Continue tour and return to Tallahassee.
 6:00 p.m.—Arrive Tallahassee.
 7:30 p.m.—Dinner and entertainment as guests Tallahassee Chamber of Commerce.
 9:30 p.m.—Entrain for Ocala.

Wednesday, October 22.

- 7:30 a.m.—Breakfast at Ocala, Hotel Marion, guests Marion County Chamber of Commerce.
 8:30 a.m.—Visit to Silver Springs; half-hour boat ride.
 10:30 a.m.—Leave Ocala by bus.
 1:00 p.m.—Luncheon at Orlando, guests of Orlando Chamber Commerce.
 2:30 p.m.—Leave Orlando for Tampa via Kissimmee, Haines City, Lake Wales (visit Bok Tower), Waverly, Winter Haven, Lakeland and Plant City.
 6:00 p.m.—Arrive Tampa.
 8:00 p.m.—Dinner, guests of Tampa Chamber of Commerce.
 Night at Hillsborough Hotel.

Thursday, October 23.

- 7:30 a.m.—Breakfast Hillsborough Hotel.
 9:00 a.m.—Leave Tampa by bus.
 11:30 a.m.—Arrive Punta Gorda; inspect bridge.
 12:00 m. —Leave Punta Gorda.
 12:45 p.m.—Arrive Fort Myers; inspect bridge.
 1:00 p.m.—Luncheon, guests Fort Myers Chamber of Commerce.
 2:30 p.m.—Leave Fort Myers.
 6:00 p.m.—Arrive Miami.
 7:30 p.m.—Dinner, guests City of Miami.
 Night at Hotel Alcazar.

Friday, October 24.

- 7:30 a.m.—Breakfast at Miami.
 9:00 a.m.—Visit Coral Gables and Miami Beach and Pan-American Airways.

- 11:00 a.m.—Leave for Palm Beach.
 1:00 p.m.—Luncheon at West Palm Beach.
 2:00 p.m.—Drive through Palm Beach; afternoon bathing party.
 7:00 p.m.—Dinner at West Palm Beach, on train.
 8:00 p. m.—Leave for Detroit.

Bluenose: "Pardon me young lady, in the matter of your dress, don't you think you could show a little more discretion?"

Flapper: "My gosh, some of you guys ain't never satisfied."

The Bigger They Are the Kinder We Feel

"Lions are friendly if you treat them well."—Sunday Dispatch heading.

Personally we have always resisted, in a humane manner, our impulse to enter their cages and kick them around.—Dublin Opinion.

As You Were!

"It says here that girls are to be truly feminine this year."

"Oh, why can't they leave us alone, and let us be natural?"—London Opinion.

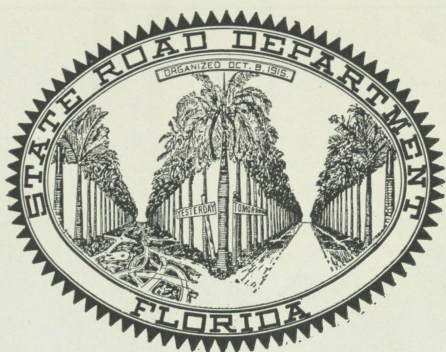
With Love and Kisses

"If an elephant charges you," advises a big-game hunter, "let him have both barrels at once." As far as we are concerned, he could have the whole gun.—Passing Show.

Ker-Splash

He (bragging about ancestry)—"Yes, my father sprang from a line of peers."

Bored Listener—"Did he drown?"—The Owl.



Florida Highways

Published Monthly
Official Publication of the State Road Department

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(*Official Residence, Tallahassee.*)

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MALLIE MARTIN, *Crestview*
GEORGE B. HILLS, *Jacksonville*
ERNEST R. GRAHAM, *Pennsuko* } *Members.*

KARL ROESCH, *Tallahassee*, *Secretary*

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L. K. Cannon, Tallahassee..... Ass't. State Highway Engineer
W. I. Nolen, Tallahassee..... Bridge Engineer
H. C. Weathers, Gainesville..... Testing Engineer
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lor, Union.

R. L. Bow, West Palm Beach..... 3rd Division
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River, Lee, Martin, Monroe, Okeechobee, Palm Beach, St. Lucie.

L. B. Thrasher, Ocala..... 4th Division
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R. K. Van Camp, Lakeland..... 5th Division
Counties—Charlotte, Desoto, Hardee, Highlands, Hillsborough,
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Auditing Division

S. L. Walters, Tallahassee..... Auditor

B. A. Meginniss, Attorney for the Department,
Editor and Business Manager.

Volume VII September, 1930 Number 9

MOTOR HIGHWAY REACHES FAR INTO ARCTIC CIRCLE

Venturesome automobile tourists who have the desire to visit out-of-the-way places will now be able to travel to a point far within the Arctic Circle via what is believed to be the northernmost road in existence. This road is located in northern Finland. Starting about 300 kilometers within the circle, it extends some 230 kilometers farther north to the Fjord of Petsamo in the Arctic Ocean. This harbor is free from ice the entire year.

A description of this road and a brief history of its construction is contained in a report which has been submitted by E. W. Skogstrom, director general of roads, Helsingfors, Finland, for the Sixth International Road Congress which will be held in Washington, October 6-11. The southern end of the newly completed highway is connected with the network of other roads in the country by means of a good highway and through this also with the railway system.

Construction of the road was begun by the Imperial Russian government in 1916 as a military measure to establish communication with the allies and thus offset the German blockade of the Baltic sea. The revolution of March, 1917, interrupted construction but upon the conclusion of peace Finland resumed the work. The road has now been in use for some time and is used by both tourists and motor trucks. It is a gravel road, five meters wide and the total cost of construction has aggregated \$1,500,000. Tourist hotels have been erected in several places and, while they are open principally during the summer, some of them remain open during the winter also. A telephone and telegraph line runs alongside the road which can be used for international communication.

Mr. Skogstrom has been named as a delegate to congress by the Finnish government along with Mr. Niilo Idman, a member of the Finnish diplomatic service.

HIGH EDGES ON SIAMESE ROADS PREVENT WASHOUTS

As motorists who travel unfrequented roads have occasion to know, a newly constructed dirt road generally has a high crown in the center, sloping off toward the edges so that it will shed water.

This practice, accepted as standard in most countries, is just the reverse of the method in far-off Siam where, instead of a crown, the road is so constructed that the edges are eight and one-half inches higher than the center, according to a report submitted for the Sixth International Road Congress which will be held in Washington in October. This report was submitted by Luang Prinyayogavibulya, chief of the Department of Ways, Bangkok, Siam.

Because Siam is generally flat, it was stated in the report, the highways consist mostly of embankments. Due to frequent and torrential rains, if the roads were built with crowns, the surfaces would soon be seriously damaged. To eliminate this they are constructed originally with the sides higher than the center and thus the water is retained in the roadway, seeping through the earth and helping to compact it, says Prinyayogavibulya. Within a year, it has been found, a new road will be fairly compact by this method, while of the other type of road virtually nothing would remain.

The writer points out that timber being plentiful, bridges on new highways are made of wood.

Transactions at Meeting of State Road Department Held at Gainesville, Sept. 10, 1930

PURSUANT to due and legal notice, a meeting of the State Road Department was held at Gainesville on September 10, 1930, with the following members present: Robert W. Bentley, Chairman, William A. Shands, Mallie Martin and George B. Hills. Others in attendance were B. M. Duncan, State Highway Engineer, B. A. Meginniss, Attorney for the Department, and H. J. Morrison, Federal Highway Engineer.

Minutes Approved

On motion of Mr. Hills, seconded by Mr. Shands, minutes of the meeting held at Panama City in August were duly approved.

CHAIRMAN'S REPORT

The Chairman submitted his regular report of the transactions since the last meeting of the department, which was received and duly filed. The text of this report is as follows:

TO THE MEMBERS OF THE STATE ROAD DEPARTMENT: Gentlemen:

Following is a brief report of matters of more than routine importance since our last meeting:

Madison County, under agreement with the Department, has delivered the \$87,000.00 of county bonds, the proceeds of which will be applied to hard surfacing Road 35, from Greenville south to the Taylor County line. Advertisement for the sale of these bonds was made returnable September 8. The Chairman regrets to report that there were no offers for these bonds.

Columbia County's Board of Bond Trustees, acting under a legislative enactment of 1929, have delivered to the Department approximately \$172,000.00 of bonds of various counties and municipalities, which bonds are an investment of the sale of Columbia County bonds voted for construction of Road 82 from Lake City to the Georgia line. The Road Department, when these securities are sold, will apply the proceeds, as far as the money will go, in construction of Road 82.

St. Johns County having met the requirements of the Department as to conditioning shoulders and ditches on Road 48, between Shands Bridge and St. Augustine, this road has been taken over for maintenance as provided for by resolution of this Board.

Securities in possession of the Department to secure the contingent funds on deposit in Bank of Bay Biscayne and the Lakeland State Bank & Trust Company have, upon request of the liquidators of these banks, been sold by the Department and the State has received the full amount of its deposits, with the remainder in each case being turned over to the bank.

The Chairman has placed with the Trust Department of the Barnett National Bank for safekeeping the unsold bonds of Taylor and Dixie Counties, and the securities turned over to the Department by Columbia County. All these securities will remain in the Barnett Bank until such time as the Department can find a purchaser for them.

The Department has received \$95,000.00 in cash from Santa Rosa County, to be used in grading Road

53, as agreed upon between the county and the Department, and work has been started on this project with state forces.

Sincerely yours,
ROBERT W. BENTLEY,
Chairman.

Glades County—Road 29

Mr. J. H. Peeples, of Glades County, appeared before the Department and requested that application be made to the War Department for its approval of the construction of a bridge across Kissimmee River, on Road 29.

On motion of Mr. Shands, seconded by Mr. Hills, the following resolution was adopted:

BE IT RESOLVED, that the Chairman be and he is hereby authorized to make application to the War Department for approval of the construction of a bridge over Kissimmee River, on Road 29, at approximately seven miles southwest of Okeechobee, Florida, which said bridge shall be constructed according to plans submitted by the Department, said plans consisting of sheets showing the location, soundings, plan and elevation of the proposed bridge.

Polk County—Road 17

Mr. Thomas W. Bryant, of Lakeland, appeared before the Department and presented a resolution adopted by the City Commission of that city confirming a tentative agreement made between the Chairman and State Highway Engineer with the city to the effect that the drainage project, the cost and installation of which was assumed by the City of Lakeland, would be installed and completed not later than the first week in October.

On motion of Mr. Hills, seconded by Mr. Shands, the following resolution was adopted:

BE IT RESOLVED, that the Chairman be and he is hereby authorized to advertise for bids for the construction of that project on Road 17 between Lakeland and Auburndale, the bids to be returnable at the first meeting possible after the federal requirements can be met.

BE IT FURTHER RESOLVED, that bids be asked on hot mix and cold mix asphalt as alternate types, with the understanding, however, that award will be made only on the approval of the Bureau of Public Roads as to type.

BE IT FURTHER RESOLVED, that the City of Lakeland be requested to proceed with the installation of the proposed drainage.

St. Johns County—Road 78

Mr. H. K. Jackson, of St. Augustine, appeared before the Department and made a request that, other things being equal, the Department use shell as a base on the construction of the remainder of State Road 78.

Osceola County—Road 2—Shingle Creek

Mr. W. J. Steed, of Kissimmee, appeared before the Department and stated that he understood that the Department has found that it must shortly reconstruct Shingle Creek bridge on Road 2 in Osceola County. He requested that this bridge be reconstructed immediately in order that there may not be any detour on Road 2 during the tourist season. Mr.

Steed was advised that the Department will see if the bridge can not be safely reinforced to last during the winter season.

Hillsborough County—Road 5

Mr. J. N. Holmes, County Commissioner of Hillsborough County, asked the Department for information with reference to the status of the location of the overpass on Road 5 near Bruing. The State Highway Engineer stated that it was the intention of the Department to proceed with the paving and to place the construction of the overpass in a separate contract.

On motion of Mr. Shands, seconded by Mr. Hills, the following resolution was adopted:

BE IT RESOLVED, that the Chairman be and he is hereby authorized to advertise for bids for the construction of a concrete pavement 20 feet in width on State Road 5 between the Pasco County line and Six Mile Creek as soon as the plans have been approved and federal authority for construction has been obtained.

Mr. J. T. Lester, County Commissioner of Hillsborough County, explained to the Department the difficulty which his Board is encountering in securing right of way for the connection between State Road 5 and Road 17.

On motion of Mr. Shands, seconded by Mr. Hills, the following resolution was adopted:

WHEREAS, the Department has surveyed and located State Road 5 in Hillsborough County as is shown by plat of said location on file in its office and in the office of the Clerk of the Circuit Court of said Hillsborough County; and

WHEREAS, this Department has found and determined, and it does hereby find and determine that it

is necessary, wise and expedient to secure by eminent domain the lands hereinafter described as a right of way for State Road 5; now therefore,

BE IT RESOLVED, that the County Commissioners of Hillsborough County be and they are hereby requested to secure, by purchase or condemnation, the following described lands, to-wit:

(Here follows a description of the lands involved.)

BE IT FURTHER RESOLVED, that said Board of County Commissioners be and they are hereby authorized to use the name of this department in any condemnation proceeding or proceedings necessary to carry out the purposes of this resolution.

BE IT FURTHER RESOLVED, that in the event that they shall elect to proceed in the name of this Department, that their counsel be and they are hereby authorized to prepare, execute and file all necessary pleadings, affidavits or documents in connection therewith and prosecute such action to completion.

AWARD OF CONTRACTS

On motion of Mr. Shands, seconded by Mr. Martin, the following resolution was adopted:

WHEREAS, this Department on September 8th received bids for the construction of certain projects and for the furnishing of certain materials and supplies as hereinafter listed; and

Whereas, the firms and individuals hereinafter named were and are hereby declared to be the lowest responsible bidders therefor; now therefore,

BE IT RESOLVED, that the contracts be and they are hereby awarded for the construction of such projects and the furnishing of such materials and supplies, as follows, to-wit:

Construction

| Proj. | Road | County | Type | Bidder | Price |
|--------|------|---------------------|---------------------------------------|----------------------------------|--------------|
| 770 | 22 | Brevard | Stone Base—Treated | Standard Asphalt Co. of Florida. | \$ 49,915.14 |
| 915 | 140 | Palm Beach | Stone Base—Treated | E. F. Powers Constr. Co. | 28,471.00 |
| 741 | 13 | Alachua | Stone Base | L. M. Gray | 10,835.00 |
| 677-B | 13 | Levy | Stone Base | Langston Const. Co. | 137,054.88 |
| 608-B2 | 4 | Brevard | Stone Base—Treated, Using Plate Guard | J. D. F. Boggs | 32,758.71 |
| 876-C | 78 | Duval and St. Johns | Stone Base | R. G. Lassiter Co. | 300,786.76 |
| 720 | 11 | Jefferson | Stone Base—Treated | Duval Eng. & Cont. | 174,504.76 |
| 892 & | | | | | |
| 915 | 30 | Indian River | Stone Base—Treated | Fred D. Beasley | 38,250.00 |
| 869 | 29 | Glades | C, G, G and DS | Reid W. Bryan Co. | 117,012.85 |

Materials

| | | | | | |
|-------|-----|----------|-------------------------|---------------------------|-----------|
| 801 | 102 | Bradford | C. M. Pipe and Coupling | Dixie Culvert & Metal Co. | 1,944.00 |
| 911 | 68 | Bradford | Oil Asphalt | Pan Am Petrol. Corp. | 979.44 |
| 911 | 68 | Bradford | Crushed Rock | Fla. Crushed Stone Co. | 2,929.08 |
| 802-A | 10 | Okaloosa | Oil Asphalt | Shell Petrol. Corp. | 20,160.00 |

Road 10—Sunset and Rocky Bayou Bridges

Mr. Martin, member of the Department, requested information as to the status of Sunset and Rocky Bayou Bridges on Road 10. He was advised that permits have been requested of the War Department, the former permits having expired.

On motion of Mr. Hills, seconded by Mr. Martin, the following resolution was adopted:

BE IT RESOLVED, that the Chairman be and he is hereby authorized to advertise for bids for the construction of Sunset and Rocky Bayou bridges on Road 10, Okaloosa County, as soon as permits shall have been obtained from the War Department.

Maintenance First Division

Mr. Martin, member of the Department, stated that a heavy movement of cotton during the fall necessarily is resulting in severe punishment to roads in

the First Division, and asked that the members bear this fact in mind in considering the maintenance budget for the year 1931.

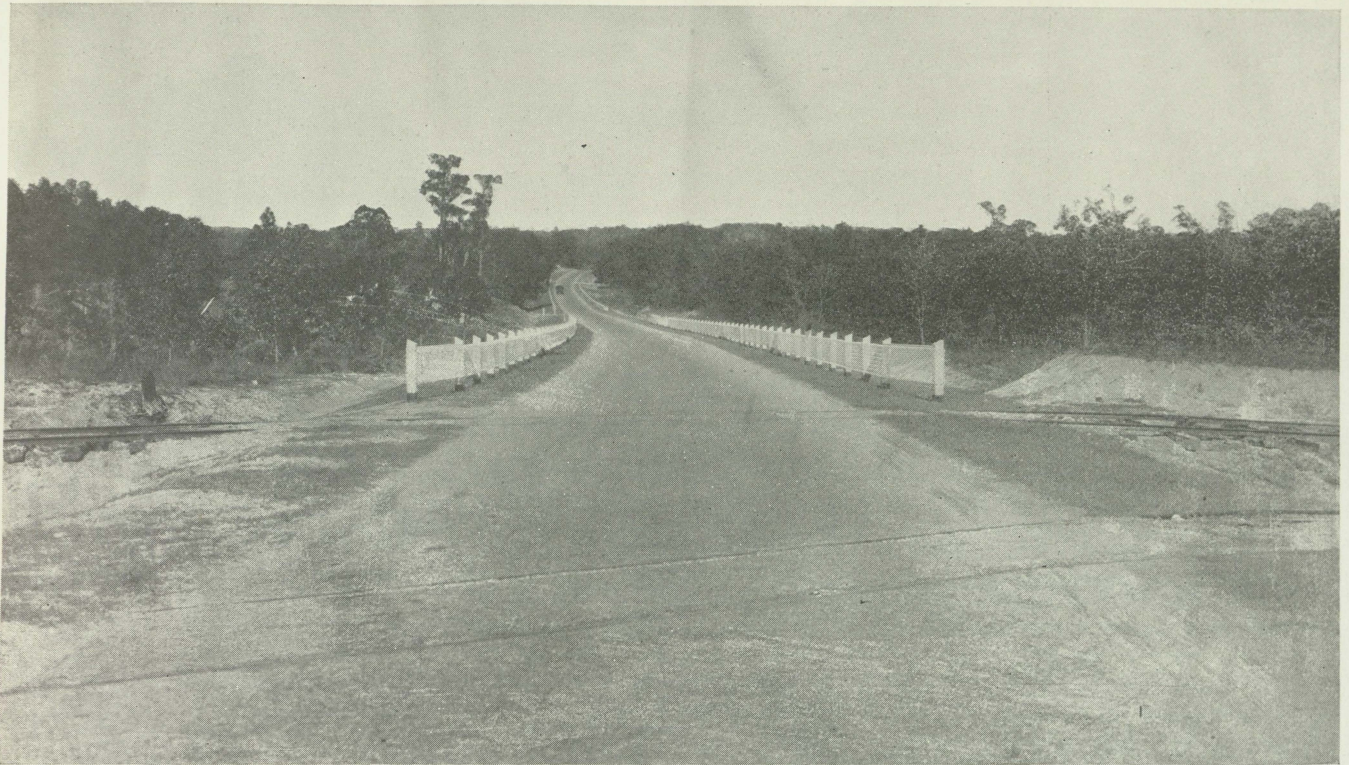
Road 1—Cottondale to Chipley

On motion of Mr. Hills, seconded by Mr. Martin, the following resolution was adopted:

WHEREAS, Road No. 1 forms a part of the Federal Seven Percent System of Florida; and

WHEREAS, the State Road Department is desirous of obtaining Federal Funds to aid in the construction of that portion of Road No. 1 from Cottondale to Chipley in the counties of Jackson and Washington; now, therefore,

BE IT RESOLVED, that the Chairman is hereby authorized to submit plans and specifications to the Bureau of Public Roads and make application for



Road 5—Citrus County. Between Floral City and Brooksville, Surface Treated.

Federal Aid for said project; and the Department does hereby pledge that the necessary funds will be provided by said Department for meeting Federal Aid on said proposed Federal Aid Project; and

BE IT FURTHER RESOLVED, that the State Highway Engineer be and he is hereby directed to commence the construction of said road as soon as all necessary plans are completed.

Road 30—Polk County

Mr. Shands, member of the Department, called to the attention of the members a request from Mr. Prine of Polk County, that this county be furnished with information as to what will be necessary to do to Road 30 in order to expect the Department to take the same over for maintenance.

On motion of Mr. Shands, seconded by Mr. Hills, the following resolution was adopted:

BE IT RESOLVED, that the Chairman and State Highway Engineer be requested to make an inspection of Road 30 in Polk County, between Frostproof and the Kissimmee River, and report to the Department on the advisability of taking the same over for maintenance.

Road 13—Alachua County—Hampton

On motion of Mr. Shands, seconded by Mr. Hills, the following resolution was adopted:

BE IT RESOLVED, that the Engineer for the Department be requested to prepare and present to the members plans looking to the straightening of the curve on State Road 13 at Hampton.

Duval County

Road 3 from Jacksonville to End of Project 659 and Road 4—Dinsmore South 5.95 Miles

On motion of Mr. Hills, seconded by Mr. Shands, the following resolution was adopted:

BE IT RESOLVED, that this Department does hereby declare the existence of an emergency and that the Chairman be and he is hereby authorized to advertise for bids returnable at the November meeting for the widening and surfacing with Kyrock, Mac-asphalt or other cold mix that section of State Road 3 between Jacksonville and the end of Project 659, and that section of State Road 4 from Dinsmore south 5.95 miles, both in the County of Duval.

Columbia County—Road 82

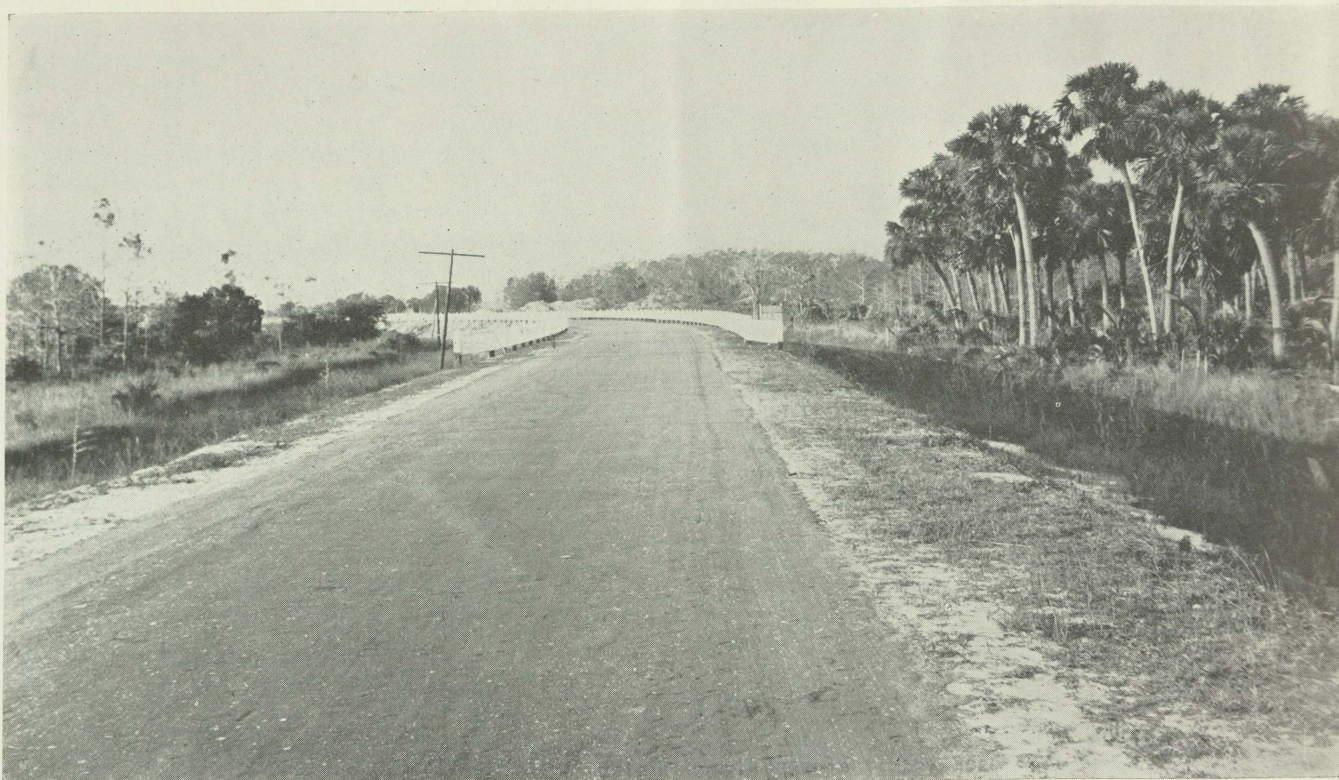
Messrs. B. H. English, State Senator, and Messrs. Farnell and Ferguson, County Commissioners of Columbia County, presented to the members a request from the Board of County Commissioners of said county, asking that the Department advertise for bids for the grading of Road 82 in Columbia County, the advertisement to state that the contract will be paid for by the delivery of bonds in the sum of \$168,000.00 which have been turned over to the State Road Department.

On motion of Mr. Shands, seconded by Mr. Martin, the following resolution was adopted:

BE IT RESOLVED, that this Department does accede to the request this day submitted by the County Commissioners of Columbia County with reference to the letting of contracts for the grading of State Road 82, provided the Attorney General advises that the Department can legally enter into a contract contemplating the payment for said work by the transfer and delivery of bonds heretofore turned over by Columbia County to the Department; and

BE IT FURTHER RESOLVED, that the Engineers be directed to prepare plans and that the County be requested to secure the necessary right of way; and

BE IT FURTHER RESOLVED, that this Depart-



State Road No. 4.—Between St. Augustine and Bunnell.

ment agrees that it will expend not to exceed the sum of \$2,600.00 for right of way out of the cash turned over to it by Columbia County; and

BE IT FURTHER RESOLVED, that the Department does donate to said Columbia County the engineering necessary in connection with the construction of said grade.

Alternate Line for State Road 160

Mr. A. F. Knotts, of Yankeetown, appeared before the Department and requested that the engineers be authorized to run an alternate line between Gulf Hammock and the Withlacoochee River, in the general direction of State Road 160, to intersect Road 15.

On motion of Mr. Bentley, seconded by Mr. Shands, the following resolution was adopted:

BE IT RESOLVED, that the engineers of this Department be instructed to run a random line in the general direction of State Road 160 between Gulf Hammock and the Withlacoochee River, to intersect Road 15 at that point.

Ocala's Invitation

The Chairman submitted letters from the Marion County Chamber of Commerce urging the Department to hold one of its meetings at Ocala at an early date.

On motion of Mr. Shands, seconded by Mr. Hills, the following resolution was adopted:

BE IT RESOLVED, that this Department does fix Ocala as the place for holding its Budget Meeting in the month of February, 1931.

December Meeting of the Department

On motion of Mr. Martin, seconded by Mr. Shands, the following resolution was adopted:

BE IT RESOLVED, that the December meeting of this Department be held at Pensacola on the second Wednesday of December, 1930.

Correction of Minutes

On motion of Mr. Hills, seconded by Mr. Shands, the following resolution was adopted:

WHEREAS, there was omitted from the minutes of the meeting held in Tallahassee, July 17, 1930, the formal resolution authorizing application to the War Department for a permit for the construction of a bridge over Dunn's Creek; now, therefore,

BE IT RESOLVED, that the minutes of said meeting be corrected by including therein the following resolution, to-wit:

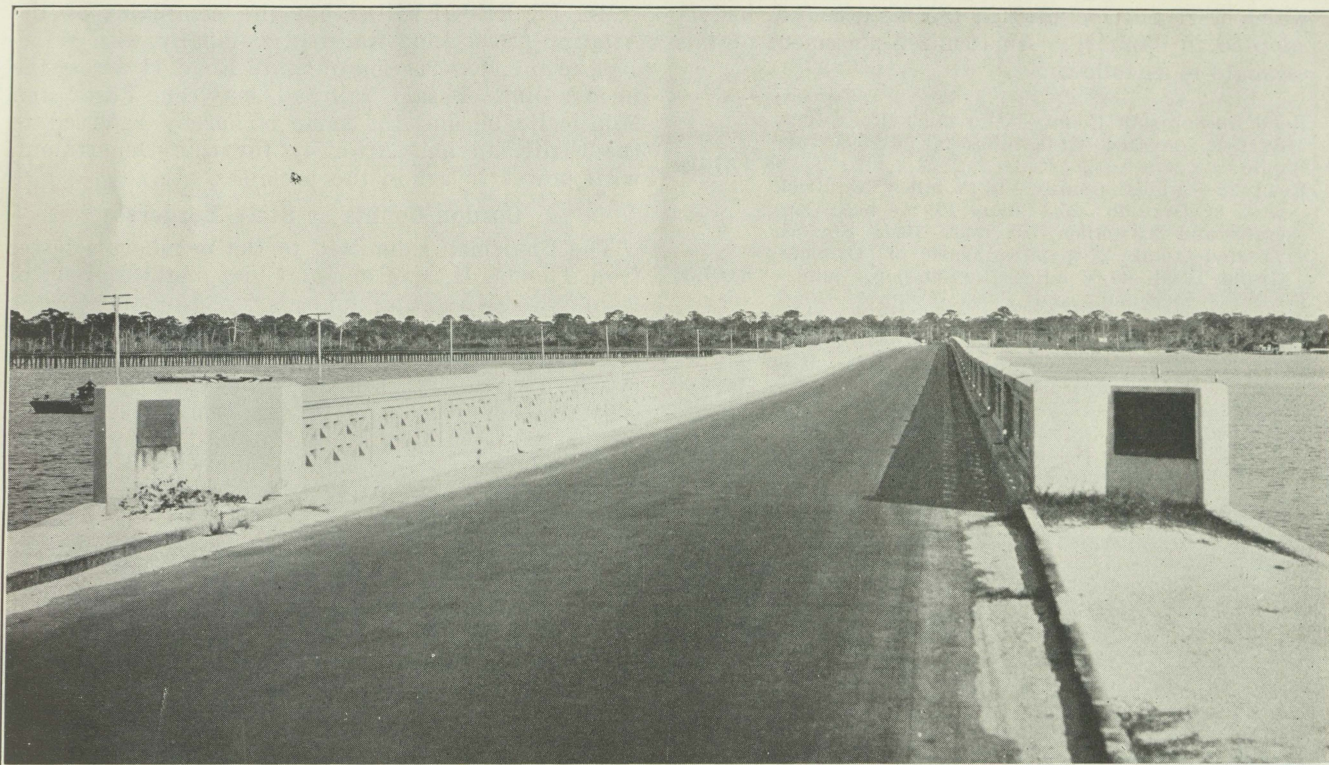
Putnam County—Road 3

On motion of Mr. Hills, seconded by Mr. Shands, the following resolution was adopted:

BE IT RESOLVED, that the Chairman be and he is hereby authorized to make application to the War Department for their approval of the construction of a bridge over Dunn's Creek, Road 3, Putnam County, three (3) miles southwest of San Mateo, Florida, which said bridge shall be constructed according to the plans submitted by the Department, said plans consisting of sheets showing the location, soundings, plan and elevation of the proposed bridge.

Use of Convicts on Federal Aid Grades

The Chairman submitted to the members a letter from the Attorney General dated August 30, 1930, and replying to a request of August 26th, stating that in his opinion the Board of Commissioners of State Institutions is authorized to contract with the State Road Department for the use of state convicts on a contract basis on the construction of grades built for the State Road Department. This opinion was asked in pursuance of a resolution adopted by the Department at its last meeting. The Chairman further stated that negotiations are going forward between the Department and the Bureau of Public Roads with



Seminole Bridge in Pinellas County

reference to the use of convicts on grades on Federal Aid projects.

State Road 1—Beaver Street Viaduct—Jacksonville

The Chairman brought to the attention of the members the request submitted by the City Commission of Jacksonville through Mr. Hills, member of the Department, that the bill of the city for \$1,560.35 engineering cost in connection with the cost of preparation of plans for the construction of Beaver Street Viaduct on Road 1, Jacksonville, be paid.

On motion of Mr. Shands, seconded by Mr. Martin, the following resolution was adopted:

BE IT RESOLVED, that the request of the City of Jacksonville for payment of engineering expense in connection with the Beaver Street Viaduct, Road 1, be referred to the Chairman, the State Highway Engineer and the Attorney for the Department, with power to act in the premises.

Walton County—Road 10—Choctawhatchee River Bridge

On motion of Mr. Martin, seconded by Mr. Shands, the following resolution was adopted:

BE IT RESOLVED, that the Chairman be and he is authorized to advertise for bids for the construction of a bridge over the Choctawhatchee River, Road 10, Walton County, as soon as a War Department permit has been secured and the plans for said bridge have been prepared and approved.

Dixie County Time Warrants

The Chairman submitted to the members a letter from Hon. J. H. Scales, dated August 27, 1930, offering 85 per cent of par for the remaining \$56,000 of Dixie County Time Warrants now held and owned by the Department, with the proviso, however, that the same shall be passed on favorably by his attorney and a firm of bond attorneys of national reputation.

On motion of Mr. Shands, seconded by Mr. Martin, the following resolution was adopted:

BE IT RESOLVED, that the offer of J. H. Scales to purchase \$56,000 of Dixie County Time Warrants at 85 per cent of par be and the same is hereby accepted, delivery of said bonds to be made at a bank in Jacksonville, upon payment therefor by Mr. Scales of the amount of his bid in cash.

BE IT FURTHER RESOLVED, that the Chairman and Attorney for this Department be and they are hereby authorized to secure the approving opinion of a firm of bond attorneys of national reputation.

Road 19—Gilchrist, Levy and Dixie Counties—Bridge Over Suwannee River at Ft. Fannin

A letter addressed to the Chairman from L. W. Drummond, Clerk of the Circuit Court of Levy County, was read, in which letter request was made by the Counties of Levy, Dixie and Gilchrist that the State take over for maintenance the Fort Fannin bridge across the Suwannee River on Road 19, the counties in joint session held by their Boards of County Commissioners having found that they are financially unable to further maintain said bridge.

On motion of Mr. Hills, seconded by Mr. Shands, the following resolution was adopted:

BE IT RESOLVED, that this Department does take over for maintenance the bridge across the Suwannee River at Fort Fannin, on Road 19, such maintenance to become effective at once.

Maintenance Budget

The State Highway Engineer submitted to the members a letter from L. K. Cannon, Assistant Highway Engineer, in charge of maintenance, in which the latter estimated that the sum of \$29,529.00 will be necessary to take care of items of maintenance which have been assumed by the Department and

which were not included in the maintenance budget adopted in January. An itemized statement of this estimate is as follows:

| | |
|---|--------------------|
| Road 5—Sarasota County—11.0 miles Rock Base Surface Treated—11.0 miles at \$125.00 per mile | \$ 1,375.00 |
| Road 22—Orange County—16.45 miles 16' Brick west of Orlando; 25.3 miles 16' Asphalt Concrete and 2.3 miles 16' Rock Base Surface Treated—total 27.6 miles east of Orlando. Grand Total—44.05 miles at \$150.00 per mile.... | 6,607.50 |
| Road 23—Hernando and Pasco Counties—Rock Base Surface Treated—31.5 miles at \$235.00 per mile | 7,402.50 |
| Road 23—Hillsborough County—Brick—16.5 miles at \$150.00 per mile | 2,475.00 |
| Road 29—Bridge—Three Mile Canal—Operator and Maint. | 875.00 |
| Road 164—Collier County—3.5 miles Rock—3.5 miles reshaping and oiling at \$2,084.00..... | 7,294.00 |
| Sub-total | 26,029.00 |
| Additional equipment necessary to handle the above increase in our maintenance will be five Ford or Chevrolet Trucks at \$700.00..... | 3,500.00 |
| | \$29,529.00 |

On motion of Mr. Hills, seconded by Mr. Shands, the following resolution was adopted:

BE IT RESOLVED, that the amount necessary to take care of the maintenance items as listed above for the remainder of the year 1930 be and the same is hereby appropriated from the Department's emergency fund.

Road 11—Jefferson County

A letter from the Atlantic Coast Line Railroad Company addressed to the Department was read, in which the railroad company contends that the Department by its construction of State Road 11 has made it impossible for the railroad to comply with the mandate of the Supreme Court requiring reconstruction of its line between Yuste on the main line and Monticello. The Chairman and Attorney explained the situation with reference to this matter; whereupon, on motion of Mr. Hills, seconded by Mr. Shands, the following resolution was adopted:

| Proj. | Road | County | Bidder | Material | Price |
|-------|------|-------------------------|-----------------------------|------------------|-------------|
| 750 | 14 | Gilchrist-Alachua | Barrett Company | TC-1 | \$ 3,673.00 |
| 735 | 40 | Walton | American Tar Prod. Co. | TC-1 | 6,014.00 |
| 735 | 40 | Walton | Standard Oil Co. La..... | Asphalt | 3,735.80 |
| 735 | 40 | Walton | Roquemore Gravel Co. | Gravel | 8,710.00 |
| 734 | 40 | Walton | Barrett Company | TC-1 | 3,304.00 |
| 734 | 40 | Walton | Standard Oil Co. La..... | Asphalt | 2,112.80 |
| 734 | 40 | Walton | Roquemore Gravel Co. | Gravel | 4,680.00 |
| 815 | 54 | Okaloosa | Roquemore Gravel Co. | Pea Gravel | 2,900.00 |
| 884 | 3 | Duval | Baker & Holmes | Concrete | 6,750.00 |

Expense Accounts Approved

On motion of Mr. Bentley, seconded by Mr. Martin, the following resolution was adopted:

BE IT RESOLVED, that the expense accounts of the members be and they are hereby approved, as follows:

| | |
|---------------------|----------|
| R. W. Bentley | \$ 76.05 |
| W. A. Shands | 63.70 |
| E. R. Graham | 150.90 |
| G. B. Hills | 93.20 |
| G. B. Hills | 26.82 |

On motion of Mr. Shands, seconded by Mr. Martin, the Department was adjourned until 2:15 o'clock P. M.

BE IT RESOLVED, that the complaint of the Atlantic Coast Line Railroad Company with reference to the construction of State Road 11 across the former line of said railroad between Yuste and Monticello be and the same is hereby referred to the Chairman and Attorney for this Department, with power to act in the premises.

Cordon Counts at State Borders

The Chairman submitted to the members a letter from Thomas H. MacDonald, Chief of the Bureau of Public Roads, stating that the cost of the cordon counts at the state borders in Florida, in which the Bureau will participate, is estimated at \$5,000.00, of which amount the Bureau will pay one-third. The cost stated covers total field and office costs, exclusive of supervision. In addition, the Bureau will pay whatever expenses may be involved in the supervision of the work by the Washington personnel of the Bureau, the state to pay the expenses of its supervisory personnel.

On motion of Mr. Hills, seconded by Mr. Shands, the following resolution was adopted:

BE IT RESOLVED, that this Department does accept the offer of the Bureau of Public Roads as outlined in paragraph next above and that the Chairman be and he is hereby authorized to arrange with said Bureau for the points at which said counts shall be made, together with such other details as may be necessary to put the plan in operation.

Award of Contracts Approved

On motion of Mr. Shands, seconded by Mr. Martin, the following resolution was adopted:

WHEREAS this Department on August 19th and August 25th received bids for the furnishing of materials and supplies as hereinafter listed; and

WHEREAS, the firms and individuals hereinafter named were and are hereby declared to be the lowest responsible bidders therefor, Now, Therefore,

BE IT RESOLVED, that the action of the Chairman in awarding the contracts hereinafter listed be and the same is hereby approved, which said contracts are as follows, to-wit:

AFTERNOON SESSION

Present as at morning session.

Announcement of Awards

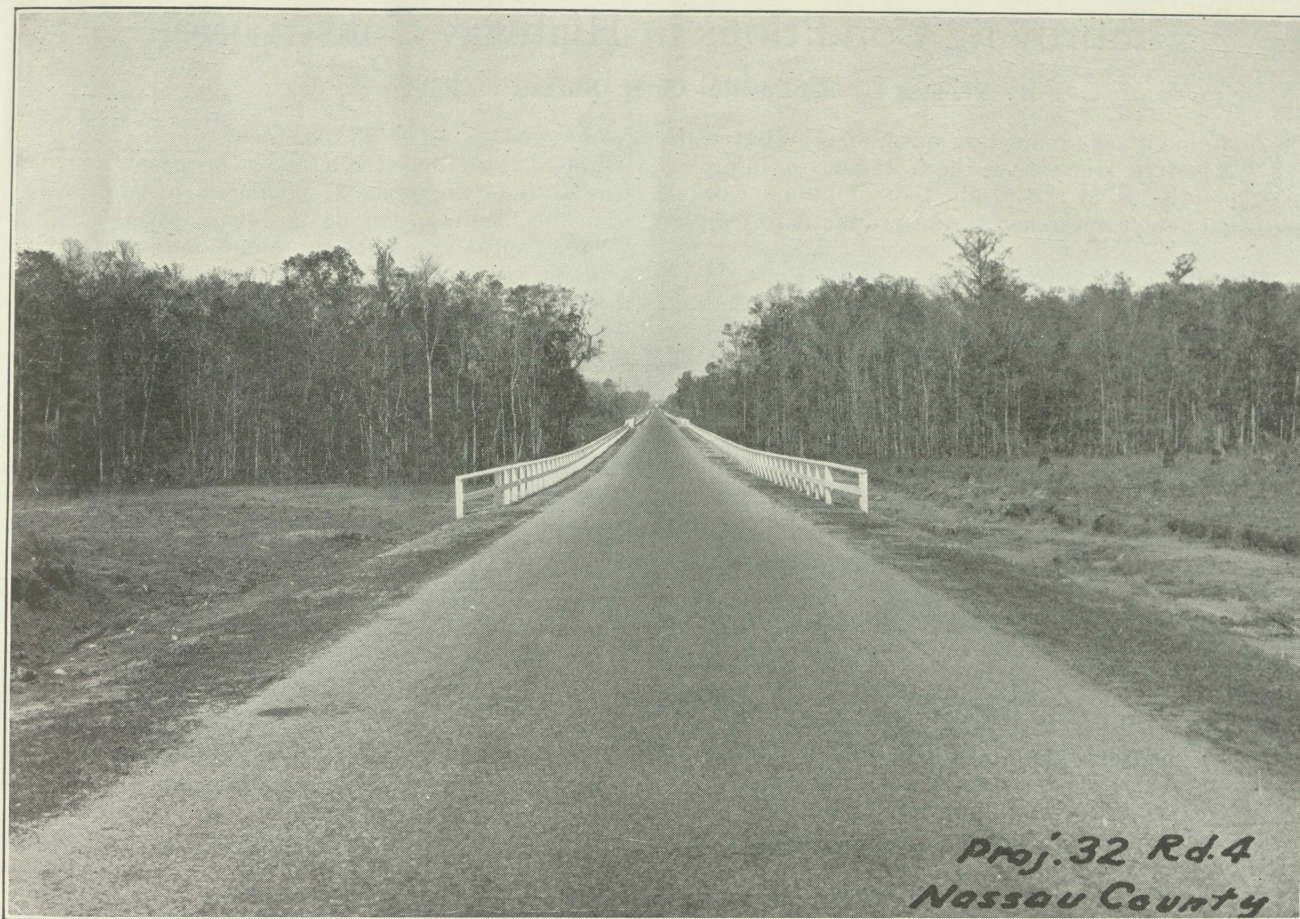
The Department here made public announcement of the awards of contracts as determined upon at the morning session.

\$87,000.00 Madison County Bonds

Florida Municipals, Incorporated, by its Vice-President, George C. Pierce, submitted to the Department an offer of 84 percent of par and accrued interest on \$87,000.00 of Madison County Bonds, on which bids were asked on Monday.

On motion of Mr. Shands, seconded by Mr. Hills, the following resolution was adopted:

BE IT RESOLVED, that Florida Municipals,



Project 32.—Road 4.—Nassau County.

Incorporated, be advised that this Department declines the offer submitted to it this day for the purchase of \$87,000.00 of Madison County bonds.

Freight Rates on Road Materials

Mr. J. Prince Webster, attorney for Florida Lime Rock Association, accompanied by a number of the members for said Association, appeared before the Department to discuss the possibility of withdrawal by the carriers of the municipal rates on road building materials. After considerable discussion of the matter, the following resolution, on motion of Mr. Hills, seconded by Mr. Shands, was duly adopted:

WHEREAS, this Department has this day listened to a presentation of the matter of its attitude towards the possible revision or withdrawal of municipal freight rates on road material, Now, Therefore,

BE IT RESOLVED, that it is the sense of this Department, without expressing any opinion or taking any position as to said rate, that the matter be left in the hands of the Railroad Commission of the State of Florida.

Purchase of Covering Material by Coverage Instead of Volume

At the request of the Chairman, the State Highway Engineer, presented to the members a table or schedule which he had worked out showing the coverage which can be obtained by the use of the several cover materials now being purchased by the Department, it being apparent that all such materials do not result in the coverage of the same area of surface. After an informal discussion of the matter it was the

consensus of opinion that no action would be taken at the present time.

Junk at Equipment Division

On motion of Mr. Shands, seconded by Mr. Hills, the following resolution was adopted:

BE IT RESOLVED, that the junk now at the Equipment Division be assembled and placed at the end of the railroad track on said property and that when that work has been concluded that the same be advertised for sale as junk f. o. b. cars, to be loaded by convicts under the supervision of this Department.

Resolution of Thanks

On motion of Mr. Hills, seconded by Mr. Martin, the following resolution was adopted:

BE IT RESOLVED, that the members of this Department do hereby express to the City of Gainesville and its people, to the Kiwanis Club of said city and to the White House Hotel their appreciation of the courtesies extended during the holding of this meeting in said city of Gainesville.

On motion of Mr. Shands, seconded by Mr. Martin, the Department was adjourned.

More than 60 national governments and their dependencies have announced they will send delegations to the Sixth International Road Congress in Washington.

New York state was the first to license motor vehicles, beginning in 1901, and collecting \$954 that year.

Improving Conditions in Highway Construction

By Thomas H. MacDonald, Chief, Bureau of Public Roads.

YOU have asked me this question: What constructive steps have been taken to improve conditions in the production of public works, with particular reference to the production of highways?

The apparent attitude of the public, so far as I have been able to understand it in years of public service, is to demand contractors and engineers who can satisfactorily complete public works contracts, within the specified period and at reasonable prices. We approach neither of these two desirable ends by talking in a general way and so I will confine my remarks to a few specific propositions.

A Billion Dollar Expenditure

In the years of Federal Aid since I have been connected with the Bureau of Public Roads, we have had something over 18,000 projects, involving more than that number of separate contracts. Practically all of these contracts have been satisfactorily completed. There have been very few proportionately, that were not satisfactorily completed in the end. We have paid out over \$800,000,000 for Federal Aid highways and bridges through the States; more than \$68,000,000 for forest highways; and \$11,000,000 for National Park highways, through the organization of the Bureau. With an expenditure totaling nearly a billion dollars, we feel that we know something about contractors and their methods. It is a pleasure to be able to say there prevails throughout our organization an appreciation of the work and of the service that the contractors have given to the production of public roads in the United States; and further, without the hearty cooperation, loyalty, and spirit of public service that the contracting industry has put into this business, we would not have been able to make the progress that we have.

So that on the whole, my message is one of gratification and congratulation to the contracting industry, including both the material and the equipment men, as we all have a great appreciation for the remarkable development of modern construction equipment which has taken place.

The Causes of Unsatisfactory Progress on Contracts

We receive each month from our districts, which cover all of the United States, a statement as to Federal Aid Projects which are unsatisfactory — on which progress has not been such as to complete within the time limit. For the present fiscal year, the cumulative reports show that the reasons for unsatisfactory progress, as detailed by our engineers in the field, have been:

| | Per Cent |
|---------------------------------|----------|
| Labor shortage | 0.5 |
| Materials | 1.2 |
| Inadequate equipment | 8.2 |
| Financial | 1.1 |
| Management | 52.7 |
| Weather | 26.4 |
| Construction difficulties | 6.0 |
| Cause not stated | 2.6 |
| Preliminary difficulties | 0.3 |
| Legal | 1.0 |

As you see over 75 per cent of the reported reasons for unsatisfactory progress revolve around the two items of management and weather. One of these can be largely controlled, while no contractor can entirely eliminate some of the weather vicissitudes. In approaching the question, this report in summary perhaps does not absolutely accurately detail the real reasons for delay in completion of work, but we regard it as reliably indicative.

There are two or three different lines of endeavor we have been promoting which we feel are directed toward the elimination of some of the difficulties of management, and may extend to obviate some of the slowing down due to the weather causes. I refer, first of all, to this matter of prequalification bidders.

The Competition of Efficiency

As one of our engineers suggested, the right to bid on public works seems to be a matter that the public feels is an inherent right of citizenship, along with the right to vote; and that any public official who dares to take the stand that a contractor ought to be reasonably qualified to perform before he bids upon a contract, large or small, is in some way entering into an intrigue to stifle competition. There can be no competition of inefficiency and efficiency, or between inefficiencies, that is helpful to the public. The only competition that can be helpful to the public is the competition of efficiency. And in the forest road work, and in the National Park road work we have for three years prequalified the contractors. The details have been well reported at other meetings, and I do not intend to go into the subject at any length. But I give you the results of the last two years.

Prequalifications of Contractors

In 1928, we had 793 applications for prequalification blanks; and from that number qualified 189. The truly wholesome effect of this qualification of bidders seems to be that the man who is not financially qualified or properly equipped to conduct a contract comes to that realization when he quietly faces one of the prequalification blanks before he has put in a low bid. In the old days, as you know, the awakening came sometimes after making the low bid. Neither he nor the public official knew what to do about it, because after a low bid is once recorded in the minutes of the public body and repeated in the press, the public looks upon it as a nice juicy plum just within reach. If the public official takes it away by saying, "This man can't do the work at these prices—can't possibly do the work at these prices," the public mind at once is turned questioningly toward his veracity. So the public official in self protection hesitates to turn down the low bidder. Consequently, he is in a much better position if he never receives an unreasonably low bid than to have it entered in the record. There will always be those who feel, "Well, maybe we could have gotten satisfactory work at those prices," regardless of their impossibility.

So the important point to prequalification is that the man who would bid upon work faces the issue of responsibility before, and not after he has put



Yellow River Bridge—Road 1.—Okaloosa County.

in his bid. This seems to be all of the limitation of competition that is involved. In 1929 we had 276 applications for blanks, and qualified 262. In other words, in two years, only 18 applications for prequalification were turned down; which was less than 4 per cent of the total number who applied.

With this record, I believe no one can truthfully say that prequalification limits competition. As I remarked before, there can be no competition that is of advantage to the public when inefficiency with inadequate equipment and inadequate financial resources is placed in competition with efficiency, adequate equipment and financial responsibility. The public would never benefit from competition of inefficiency with efficiency and the awarding of work to the inefficient contractor rather than the contractor who can and does satisfactorily perform his undertaking.

After prequalifying contractors, we received in 1928, 470 bids—1929, 393 bids. The average number of bidders at each letting in 1928 was 4.7 and in 1929, 5.4. In other words, five contractors bid for each job in each of the two years. There was only one default in each of the two years. In 1926, the first year preceding prequalification, we had six defaults. It seems to me that on the basis of the facts as I have given them, we need no other arguments for prequalification. We have also pretty well exploded, with the prequalification experience, the idea that any contractor who can furnish a bond is a properly equipped contractor.

Contractors' Bonds

In common with many other public officials, I had reached the point several years ago of doubting whether we ought to continue to demand contractors' bonds. That is, we had come to the point where we were about ready to break away from

the old established idea that the public should be protected by surety bonds, and to set up some other form of protection that should be less abused. There are today some conditions which are to be eliminated. May I say to you contractors assembled, that no contractor taking a Federal Aid contract has to take a bond from any particular company in any state in the Union. We occasionally get information that agents of bonding companies are trying to control contracts. They cannot control Federal Aid contracts in that way—if we know it. And I believe that the contractors ought to have enough back-bone to pass the information along to us if any attempts of this kind are made.

The best movement that has taken place to reinstate contractors' bonds to a favorable position in the minds of public officials is the establishment of the Bureau of Contract Information, under the general auspices of the Associated General Contractors. We will make progress by getting the facts, by the work that will be done through this bureau, and I am very much pleased with the support that this work is receiving from those who are in the position to give contract information in detail.

It seems to me that with the facts which are collected and made available through this bureau to the public official and others entitled to them, we will eliminate the inefficient contractor to a considerable extent and will help to stop some of the practices which very nearly destroyed public faith in contractors' bonds themselves. As I say, there are still some spots to be cleared up in that field, and I only hope that the contractors will, through their own bureau and in other ways, help to weed out practices that are bad.

For example, we have a suit pending against us right now, brought by a bonding company on some



Road 2.—Marion County, near McIntosh. Rock Base, Surface Treated.

work conducted by the Bureau of Public Roads in the days before pre-qualification. It was in the days when every contractor who could get a bond was a qualified contractor. We didn't want the contractor—he was not a real contractor, he had neither the equipment or the financial backing to support the job. He was able to induce a poor fellow to go into partnership with him and supply some financial backing, and had a bond written by the company which is now suing the government, through an agent whom it had expressly forbidden to write the bond. So, the bonding company, through the act of the agent, gave itself a contractor that it did not want, and gave the Bureau of Public Roads a contractor that we did not want. Nobody was pleased, unless it was the agent who got the commission on the bond, and as far as I know, he is the only one who made any money out of the deal.

And so, when I speak of bonding practices, I am not speaking of practices which may be ordered by the bonding companies themselves. There are bad practices which grow out of a failure to control the agents. The companies who issue bonds are responsible for their agents and must bring them under control. While there is no criticism of agents who earnestly pursue the business of writing bonds, we do not want these same agents engaging in the contracting field in attempts at political manipulations or otherwise blocking public officials in their

efforts to conduct public lettings in a clean cut and wholly fair manner.

Construction Management Studies

In the setting up of the management studies being conducted under Mr. Allen of the Bureau of Public Roads we have taken a step that will be helpful in establishing better relationships between the contractors and public officials and their engineers. The Bureau established these management studies with the idea of training young engineers to a greater understanding of the difficulties of production and the adequate methods by which to produce work to secure a supply of such men to feed our engineering organization. It has been a time honored custom, as you know, to start the engineer at the end of a transit and level or pulling a chain, or over a drafting board. We have rather reversed this idea, and are starting our young engineers in the field, studying in cooperation with the contractors and the engineers in charge of the work the production of each part of the work in relation to the whole.

So we start our young engineers, each year, in the business of studying the production of roads and the contractual management. Referring back to these causes for inadequate progress on Federal Aid projects, management is listed as bearing the burden for over half of the slow or unsatisfactory progress.

Each year we pick out from the colleges twenty or thirty young men and, in cooperation with con-



Road 2.—Fruitland Park, Lake County.

tractors who are interested in studying their own organization, we place these young men on the job to study each operation; to study the equipment relative to the key equipment on possible production. For example in concrete road production, the amount of concrete that the mixer can produce is considered the key to the plant production. We estimate the amount of concrete that can be put through the mixer with efficient management and against this measure the progress in all parts of the work.

Idle Equipment

Some of you know of the results but it may surprise some that in a very careful study of more than 100 concrete jobs, we found that the contractors' equipment, due to major delays, that is, delays above 15 minutes each, was idle 40 per cent of the time. This was due to major delays, and takes account only of the time elapsing after the crew was on the job and equipment assembled and ready to work. We found further that the second class of delays, the minor delays, amounted to another 16 per cent of the time. So you see that today the bids really are necessarily based on somewhere around 50 per cent of the efficiency of the key equipment.

This does not mean that we are able to get 100 per cent production; so it is not fair to use such figures to say that the contracting industry is only 50 per cent efficient. For example, just to illustrate the matter of major losses on concrete road production.

Causes of Delay

Rain accounted for $9\frac{1}{2}$ per cent—this is an average for about 100 jobs, which varied all the way from inefficient jobs up to jobs that ran 90 per cent efficient, and wet subgrade 8 per cent. You see, there is $17\frac{1}{2}$ per cent that probably could not be avoided. Lack of prepared subgrade—which could be avoided,

3 per cent; lack of materials, which could be avoided, $3\frac{1}{2}$ per cent; moving plant set-up, $3\frac{1}{2}$ per cent; inadequate supply and faulty operation of hauling equipment, 3 per cent; mixer trouble, 2 per cent; lack of water at mixer, 2 per cent; loading plant trouble, $1\frac{1}{2}$ per cent, miscellaneous causes, 4 per cent; a total of 40 per cent, all exacting delays more than 15 minutes each in length. I am not going into that subject further. I am only giving you this as indicative of the policy which we are pursuing, of attempting to feed men into the engineering organization of the Bureau of Public Roads after a training on production.

You will find through my talk that there has been no attempt to say that the engineer is perfect and the contractor is always wrong. We knew that while there may in some cases exist a feeling, sometimes on one side and sometimes on the other, that the other side is one hundred per cent wrong, after all the causes of difficulties are probably about equally divided. For example, until we started these management studies, we had not appreciated—and I confess it with some chagrin—that we may design a road so that the contractor with proper equipment can produce efficiently, or we make it impossible for him to use his equipment—any given equipment, efficiently. That is, we may design the cuts and fills so that the length of hauls so vary from day to day, that the number of wagons necessary to keep the shovel busy one day may be too many or too few the next. The contractor then is bound to compromise, and to have his whole equipment operating something under its efficiency, due to poor design by the engineer.

Designing For Efficiency

We cannot charge such results to the contractor if the engineer does not design the work so that the contractor can, with any given equip-



State Road No. 3.—Seminole County.

ment, build efficiently. We have a long way to go in the engineering field to design with efficient production in view. All of these matters reach into important possibilities of reducing costs of public works production. Each of these—the prequalification of contractor; the eradication of the incompetent; better bonding practices that we are getting through the information supplied through the Bureau of Contract Information; the study by the engineers of their design for proper execution by the contractor; and the bringing of men into the engineering field who know the contractor's problems, sympathize with him, and can be helpful in

solving them, are important advances toward better public service. These thoughts are expressed as the thoughts which we have with us all of the time in the conduct of this Federal Aid work. We appreciate that with the increase of \$50,000,000 in the Federal appropriation for this year we must have the friendly and vigorous cooperation of many more contractors than we have had before. We hope for attractive prices, of course, but we want to get these prices attractive to the public through efficiency of production, and not through loss to the contractor, or by throwing the work back on the bonding companies to complete.—Roads and Streets.

Sixth International Road Congress

OUTDOOR demonstration of road building equipment and materials will constitute a valuable part of the program arranged for the Sixth International Road Congress at Washington October 6-11, in the opinion of congress officials.

Mr. W. A. Van Duzer, a member of the Permanent Commission of the International Association of Road Congresses, and president of the American Road Builders' Association which is holding the exposition of road construction and maintenance equipment and materials in Washington auditorium as a part of the road congress, points out that the outdoor demonstration will give the delegates from more than 60 nations a working knowledge of the mechanical devices which have given America its place as leading the world in road building.

"As the Congress sessions deal with various phases of highway construction and maintenance, traffic and administration, the members may combine their studies of the engineering methods of the best modern road building practice with observation of materials,

tests and demonstrations of equipment under most working conditions," Van Duzer declares. "Thus they will be enabled to carry back to all corners of the earth a comprehensive report of the status of road building in the leading nations today. The effect of this dissemination of knowledge on the world's great industry of highway transportation will undoubtedly be felt throughout the next century. It will result in increased mileages of good roads in every civilized nation, with great attendant benefit to the furtherance of world prosperity and international peace."

The congress sessions will have reports prepared by leaders in the highway field of this country, and discussed by distinguished highway engineers and officials from every nation represented. The exposition will have the best mechanical products of all the leading manufacturers, with a great number of the heavier and complicated machines taken to the proving ground and put through their paces in charge of expert engineers.

Special features will be arranged for each day of the outdoor demonstration, aimed to be of especial interest in certain phases of highway work.

The opening of the exposition will take place October 7, following the opening sessions of the road congress the previous day. A luncheon will be tendered to all delegates by the American Road Builders' Association and the afternoon and evening will be set aside for attendance at the exposition and the outdoor demonstrations which will be carried on a short distance from the auditorium and the United States Chamber of Commerce building, where congress registration and business sessions will take place.

Special honors will be paid by the American Road Builders Association to its honorary Pan American and European representatives, many of whom will attend the road congress as official representatives of their governments.

Notable among this group will be Ing. M. A. Coroalles, chief engineer of roads and bridges, Havana, Cuba, who is president of the Association's Pan

American Division, comprised of honorary members from all the Central and South American countries. He will be accompanied by Ing. Don Miguel Villa, Adolfo Arellano, Pablo Ortega and Francisco J. de Sola, honorary members from Cuba.

Among the official delegates from Mexico will be Alfredo Becerril Colin, federal highway commissioner; Leopoldo Farias, chief of the construction department; and Andres Ortiz, governor-elect of the state of Chihuahua. This group will arrive several days prior to the congress opening and will be guests of the association on inspection tours of highways in the vicinity of Washington.

All available space in the Washington auditorium has been taken by highway equipment manufacturers and additional requests for space are daily being received. A large space will be used by the United States Bureau of Public Roads to demonstrate its work in the new science of subgrade soils, a subject which will be of keen interest to the majority of the foreign delegates.

Road Congress Seen as Aid To Business

International Meeting of Highway Engineers and Administrators Will Bring Better Economic Conditions
Says Roy D. Chapin, Head of American Organizing Commission

THAT the Sixth International Road Congress, to be held at Washington October 6 to 11, will exert a beneficial influence upon business, not only in the United States but throughout the world, was the opinion expressed by Roy D. Chapin, president of the American Organizing Commission, in discussing the coming sessions at a meeting of members of the Commission who are making arrangements for the parley. The Congress is being held at the invitation of the United States Government under the auspices of the Permanent International Association of Road Congresses, Paris.

"The fact that 60 or more foreign governments have seen fit to send delegations to this Congress," Mr. Chapin said, "indicates beyond any doubt that economic conditions throughout the world are on the upgrade. These delegations number anywhere from one to 25 or 30 persons. The caliber of the foreign engineers and highway administrators that will gather in Washington also indicates the great amount of interest which countries throughout the world are taking in highway transportation."

Problems of engineering, administration and financing of highways will be discussed by the delegates, as will also various phases of traffic regulation and other matters. Previous sessions have been held in Paris in 1908, at which time the Permanent International Association of Road Congresses was founded in Brussels in 1910, London, 1913, Seville in 1923 and Milan in 1926.

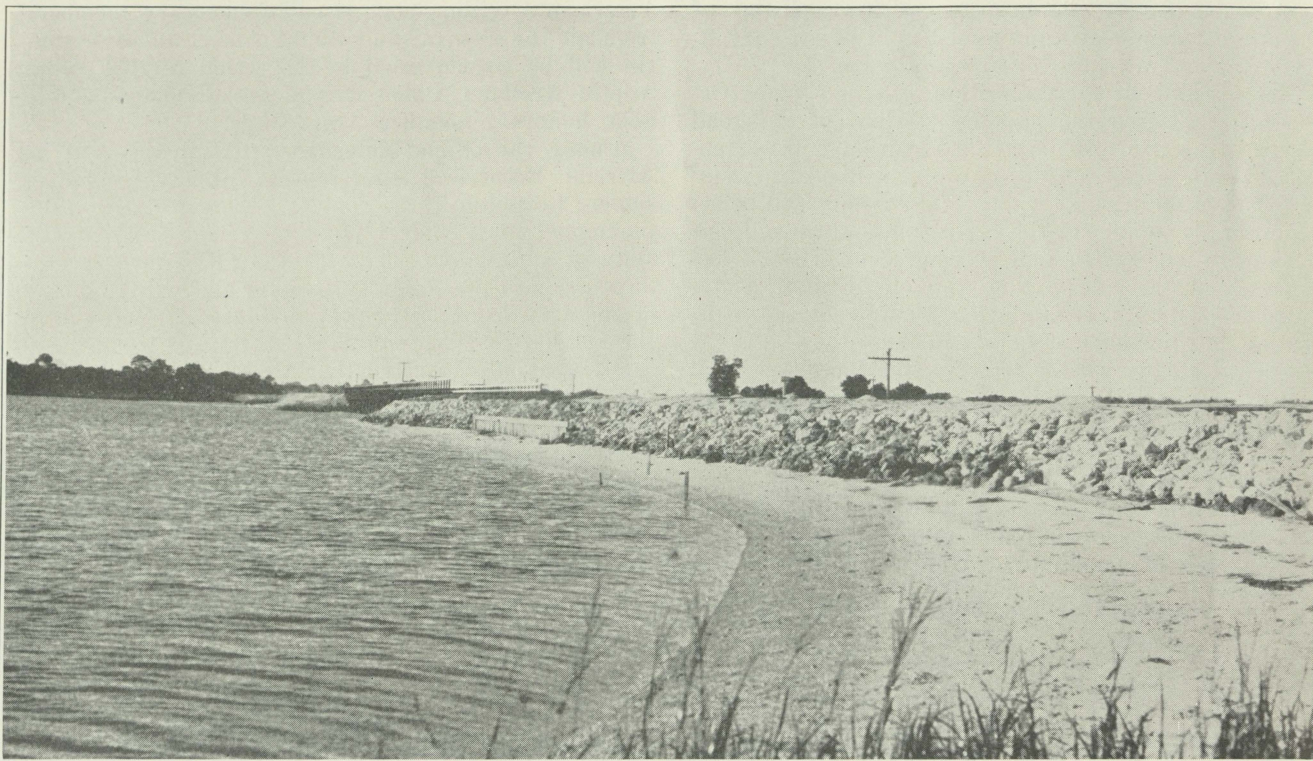
"The direct public reaction to the Congress will be the impression that world affairs are getting back to their normal course," Mr. Chapin said. "The sessions will serve to rivet public attention to the question of highway transportation, a question that is of vast economic significance to everyone, and they will thus help to turn the world's thought toward more fruitful channels.

"It is well-known that transportation is one of the most important keys to economic progress and inasmuch as highways are built at comparatively small cost and are built quickly, we can look for an expansion of highway systems all over the world within the comparatively near future.

"The delegates, having had an opportunity to discuss the latest developments in highway transportation from both the engineering and economic standpoints, will return home with substantial reports which will serve as bases for expansion of their countries' highway programs. Public demand and economic necessity will make it paramount that as much of these programs as is possible be undertaken without appreciable delay."

An expansion of highway systems throughout the world naturally means increased employment in construction and, as a logical sequence, increased employment in the systems of distribution and production, Mr. Chapin said. While this will not have a direct and immediate effect upon present conditions, with an acceleration in construction in the near future, we may look for a gradual and decided improvement in economic affairs. Continuance of an expanded highway program will assure increased stability to the economic structure of the world, he said.

In the preparation of their reports the delegates will be facilitated by having the opportunity of visiting an international exhibition of road building machinery. This will be held in conjunction with the congress under the auspices of the American Road Builders' Association. This exhibit will include the latest implements used in the construction of any type of road. Arrangements have been made whereby foreign manufacturing firms may bring their exhibits into the United States under bond duty free.



Road No. 13.—Near Cedar Key. Shoulder Protection of Native Flint Rock.

Uncle Sam Watches Road Builders

Lowest Bidder for Job Not Always the Best, Says Government. Bureau of Public Roads to Oust "Irresponsible Bidder."

By HAMILTON M. WRIGHT.

WITH a vast increase in road construction which now reaches \$1,500,000,000 annually for county, state, and Federal roads in the United States, the number of irresponsible bidders on road contracts is increasing throughout the whole country, according to the Bureau of Contract Information, Inc., an organization promoted by the Associated General Contractors of America and authorized by leading surety companies, to furnish advance information as to the qualifications, equipment, past performance, and financial standing of bidders on large projects. Irresponsible bidders are causing untold losses to the public in poor roads or forfeited contracts, according to S. M. Williams, president of the bureau.

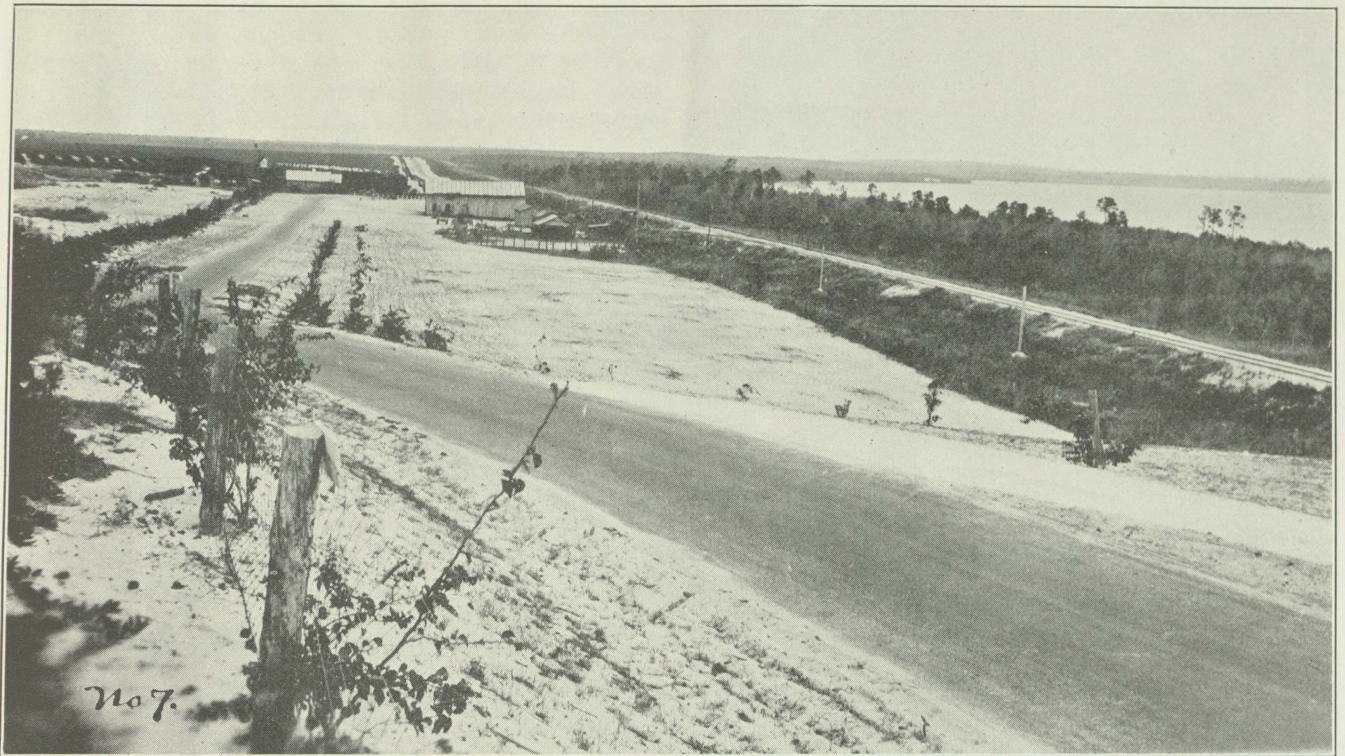
"A very large proportion of contractors today, if forced to liquidate would be found irresponsible," Mr. Williams said. He cited the case of a contractor who had applied recently for bonds in order to qualify as a bidder on a stretch of road but who on investigation was found to be owing \$120,000. The application for a bond was refused. Countless delays in road construction and improperly built roads, many lawsuits and heavy road repair bills are said to result from the prevailing method of awarding bids.

For the past three years the U. S. Bureau of Public Roads has led in a movement to eliminate the irresponsible bidder by requiring prospective bidders on road contracts to fill out blanks fully setting

forth their past performance, equipment, financial standing and experience. This plan has been meeting with great success, as irresponsible contractors hesitate before attempting to fill out the pre-qualification blanks. And they usually abandon the idea altogether. Many state road bureaus have adopted the plan for the prequalification of bidders on public roads which is gaining rapidly; prequalification of bidders has been in use in Wisconsin for six years.

Generally speaking the prevailing system for the technical qualification of bidders on public roads throughout the United States is the issuance of bond guaranteeing the completion of the road according to specifications. Something further is now required, according to authorities on the subject since experience, equipment, successful past performance, financial ability, and integrity are essential to the complex art of building a modern road that will stand up under traffic. Through fulfillment of the technical bonding qualifications, irresponsible contractors are said to under bid responsible firms and even go below official engineering estimates by a wide margin, with the result that the road is either thrown back upon the public or the "job is robbed" or far less than maximum performance is produced in a very large number of cases.

The practice of invariably awarding the bids to the lowest bidder is so firmly established that public officials hesitate to incur censure by refusing him the contract even when they know he cannot do the



Scene Near Lake Stearns, Highlands County.

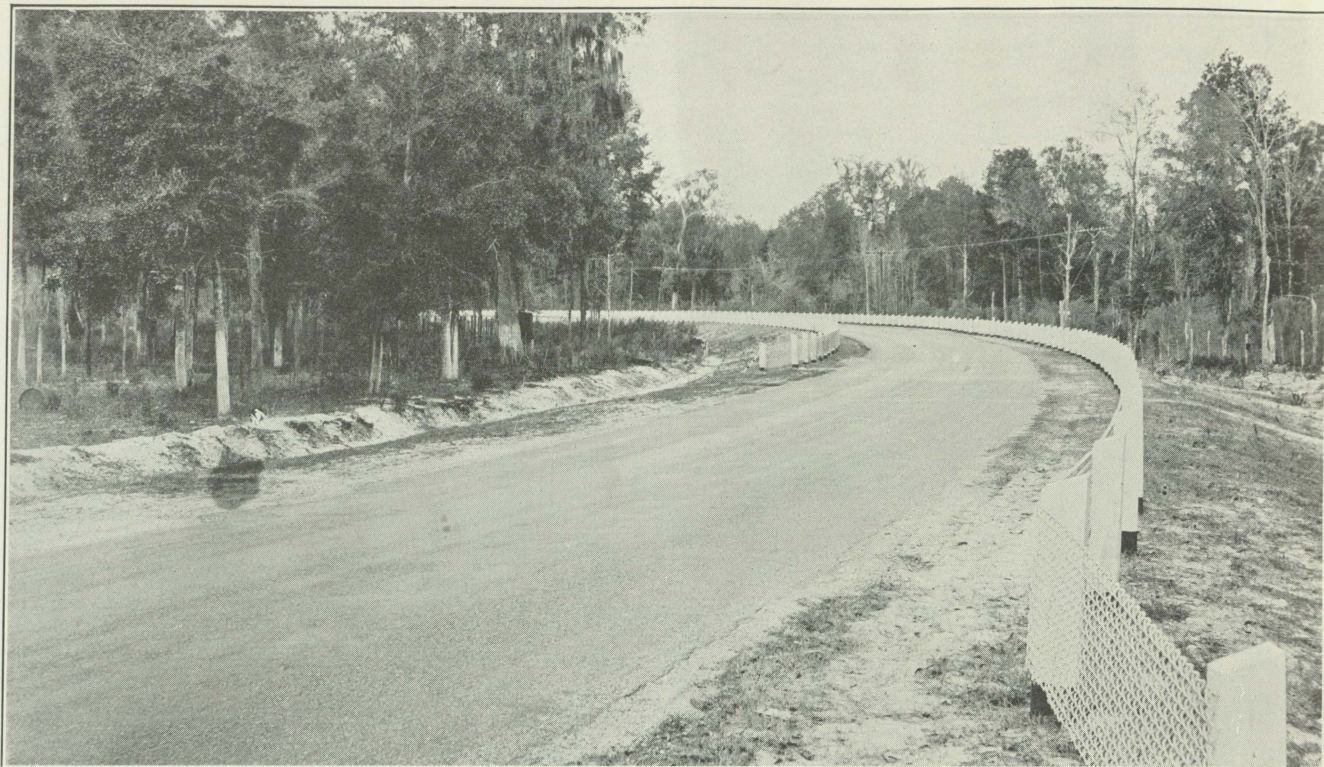
work properly. On this point, Thomas H. MacDonald, Chief of the U. S. Bureau of Public Roads, said recently before a board meeting of the Associated General Contractors: "As one of our engineers suggested, the right to bid on public works seems to be a matter that the public feels is an inherent right of citizenship, along with the right to vote; and that any public official who dares to take the stand that a contractor ought to be reasonably qualified to perform before he bids upon a contract, large or small, is in some way entering into an intrigue to stifle competition. There can be no competition of inefficiency and efficiency—or between inefficiencies that is helpful to the public. The only competition that can be helpful to the public is the competition of efficiency. And in the forest road work, and in the National Park road work, we have for three years prequalified the contractors.

"After a low bid is once recorded in the minutes of the public body and repeated in the press, the public looks at it as a nice juicy plum, just within reach. If the public official takes it away by saying: 'This man can't do the work at these prices'—the public mind is at once turned questioningly toward his veracity. So the public official, in self protection, hesitates to turn down the low bidder. Consequently he is in a very much better position if he never receives an unreasonably low bid than to have it entered on the record."

While the prequalification clause is aimed to prevent the irresponsible bidder from getting on the record, the real fault, it is said, lies with the public which is so unfamiliar with the relative values of methods, materials, and varying costs of modern types of road construction as to be unable to back up a public official who takes an intelligent stand in awarding the contract to the bidder whose work

and source of supplies, equipment and experience promises the best road for the money. In other words, the cheapest road is not always the best; it may be much more expensive in the end than a road costing more. The average man will take an acute interest in the building of a home and will require satisfaction as to the materials going into it, but he is absolutely at a loss when confronted with the question as to the quality of stone, for example, which is going into a road. But under the prevailing system the lowest bidder is very apt to get the job even if he is an irresponsible bidder provided he is equipped with the technical qualification of a bond. While this qualification which is holdover from days when dirt roads were the rule it is not sufficient of itself for modern road requirements, and the job goes to the lowest bidder rather than to the lowest responsible bidder. Often a record of successful work in the construction of roads which have stood up in first-class style for many years, is ignored for the lower bid of an irresponsible contractor.

Sometimes the consequences of the failure to inquire as to the financial ability, equipment, and record of a bidder will be felt for a period of years. Mr. MacDonald, chief of the Bureau of Public Roads, related such an incident in the address already referred to. He said: "We have a suit pending against us right now, brought by a bonding company on some work conducted by the Bureau of Public Roads in the days before prequalifications. It was in the days when every contractor who could get a bond was a qualified contractor. We didn't want the contractor—he was not a real contractor, he had neither the equipment nor the financial backing to support the job. He was able to induce a poor fellow to go into partnership with him and



Project 505.—Road 2.—Columbia County. Rock Base Surface Treated.

Contracts Awarded by State Road Department

JANUARY 1st, 1930, TO AUGUST 25, 1930

| Proj. | Road | County | Contractor | Length Miles | Length Feet | Contract + 10% | Type |
|-----------|------|-------------------|--------------------------------|-----------------|----------------|-------------------|-----------------|
| 70 | 5 | Charlotte | Tampa Shipbldg. & Engr. Co. | ..... | 75 | \$ 45,676.40 | Bascule |
| 73-B | 17 | Polk | Cone Bros. Const. Co. | ..... | 305 | 43,984.54 | Conc. Bridge |
| 757-B | 2 | Polk | Florida Bridge & Const. Co. | ..... | 117 | 15,234.78 | Conc. Bridge |
| 758-B | 2 | Polk | Cone Brothers Const. Co. | ..... | 436 | 59,267.06 | Conc. Bridge |
| 20 | 1 | Holmes-Washington | Florida Basic Rock Co. | ..... | 2.0 | 19,800.00 | Rock Base |
| 62-A | 24 | Osceola | L. B. McLeod Const. Co. | ..... | 5.22 | 123,676.65 | R. B. S. T. |
| 73-A | 17 | Polk | Wm. P. McDonald Const. Co. | ..... | 3.66 | 38,283.19 | Mac Asphalt |
| 63-C | 4 | Broward | R. G. Lassiter & Co. | ..... | 13.24 | 470,941.54 | Concrete |
| 74 | 2 | Orange | Manly Const. Co. | ..... | 14.34 | 387,032.94 | Asp. Concrete |
| 698 | 19 | Leon | H. E. Wolfe Const. Co. | ..... | 12.45 | 276,425.45 | Concrete |
| 65 | 5 | Hillsborough | C. M. Moore Const. Co. | ..... | .30 | 23,780.90 | R. B. S. T. |
| 721-B | 3 | Putnam | L. M. Gray | ..... | .25 | 18,829.00 | R. B. S. T. |
| 835 | 5 | Marion-Citrus | Manly Const. Co. | ..... | .15 | 4,439.71 | R. B. S. T. |
| 40-B | 4 | Broward | L. M. Gray | ..... | .31 | 10,484.43 | R. B. S. T. |
| 68-A | 4 | Broward | S. P. Snyder & Sons | ..... | .37 | 28,972.93 | R. B. S. T. |
| 587-B | 5-A | Suwannee | Duval Engineering & Contr. Co. | ..... | .34 | 17,736.22 | R. B. S. T. |
| 876-A | 78 | Duval-St. Johns | Standard Dredging Co. | ..... | 8.00 | 81,574.76 | Shell Base |
| 758 | 2 | Polk | A. E. Campbell | ..... | .10 | 2,095.74 | R. B. S. T. |
| 500-B & C | | | | | | | |
| 515 | 20 | Bay-Jackson | Marianna Lime Products Co. | ..... | 29.43 | 328,212.85 | R. B. |
| 750 | 14 | Gilchrist | L. M. Gray | ..... | 12.26 | 109,936.23 | R. B. |
| 669-Y | 27 | Collier | Fred D. Beasley, Inc. | ..... | 10.55 | 22,320.49 | Surf. Treatm't. |
| 769 | 5 | Lee | Fred D. Beasley, Inc. | ..... | 1.89 | 26,988.64 | R. B. |
| 870 | 143 | Palm Beach | Central Fla. Const. Co. | ..... | 135 | 8,790.26 | Timber |
| 766 | 10 | Bay | Fla. Bridge & Const. Co. | ..... | 555 | 4,461.47 | Timber |
| 688 | 10 | Bay | R. J. Arrington & Son | ..... | 60 | 396.16 | Timber |
| 767 | 10 | Bay | J. U. Fletcher | ..... | 45 | 751.43 | Timber |
| 669-C | 27 | Dade | Everglades Const. Corp. | ..... | 9.48 | 13,183.50 | Rock Cap |
| 911 | 68 | Bradford | Duval Engr. & Contr. Co. | ..... | 3.50 | 24,069.54 | Rock Base |
| 714 | 28 | Union | F. W. Long & Co. | ..... | 9.14 | 88,172.06 | Rock Base |
| 62-A | 24 | Osceola | L. B. McLeod Const. Co. | ..... | 5.87 | 104,950.53 | R. B. S. T. |
| 62-D | 24 | Osceola | L. B. McLeod Const. Co. | ..... | 12.66 | 307,070.29 | R. B. S. T. |
| 708 | 11 | Jefferson | Duval Engr. & Contr. Co. | ..... | 7.98 | 130,331.33 | R. B. S. T. |
| 806-A | 25 | Hendry | E. F. Powers Const. Co. | ..... | 11.00 | 199,911.51 | R. B. S. T. |
| 57 | 3 | Nassau-Duval | R. C. Huffman Const. Co. | ..... | 3.40 | 173,830.52 | Embankment |
| 715-B | 28 | Union-Bradford | Fla. Bridge & Contr. Co. | ..... | 783 | 79,872.68 | Conc. Bridge |
| 66 | 5 | Sarasota | R. C. Huffman Const. Co. | ..... | 459 | 128,288.17 | Conc. Bridge |
| 75 | 27 | Collier | Central Station Equip. Co. | ..... | 561 | 125,332.26 | Conc. Bridge |
| 898 | 4-A | Monroe | The Belcher Oil Co. | ..... | 5.00 | 5,982.24 | Surf. Treat'd. |
| 745 | 19 | Taylor | Fred D. Beasley, Inc. | ..... | 15.95 | 190,777.88 | Rock Base |
| 876-C | 78 | Duval-St. Johns | R. G. Lassiter & Co. | ..... | 19.20 | 330,866.43 | Rock Base |
| 884 | 3 | Duval | Baker & Holmes | ..... | .50 | 7,425.00 | Concrete |
| 869 | 29 | Glades | Reid W. Bryan | ..... | 9.04 | 128,714.13 | Grading |
| 720 | 11 | Jefferson | Duval Engr. & Cont. Co. | ..... | 9.70 | 191,955.23 | R. B. S. T. |
| 608-B-24 | | Brevard | J. D. F. Boggs | ..... | 1.07 | 36,034.58 | R. B. S. T. |
| 677-B | 13 | Levy | Langston Const. Co. | ..... | 12.58 | 150,760.36 | Rock Base |
| 741 | 13 | Alachua | L. M. Gray | ..... | 1.00 | 11,918.50 | Rock Base |
| 770 | 22 | Brevard | Standard Asp. Co. of Fla. | ..... | 3.30 | 54,906.65 | R. B. S. T. |
| 915 | 140 | Palm Beach | E. F. Powers Const. Co. | ..... | 2.00 | 31,318.10 | R. B. (Sand) |
| 892-951 | 30 | Indian River | Fred D. Beasley, Inc. | ..... | ..... | 42,075.00 | R. B. (Sand) |
| Totals | | | | 257.23 | 3531 | \$4,777,840.26 | |

supply some financial backing, and had a bond written by the company which is now suing the Government, through an agent whom it had expressly forbidden to write the bond. So, the bonding company, through the act of the agent, gave itself a contractor that it did not want, and gave the Bureau of Public Roads a contractor that we did not want. Nobody was pleased, unless it was the agent who got the commission on the bond, and as far as I know, he is the only one who made any money out of the deal."

It is pointed out that if an irresponsible bidder puts in the lowest bid, underbidding all his competitors by a wide margin, and his bid is accepted according to the customary practice, and is, as has often happened, far below the estimates of the official engineers, an economic pressure is exerted on him to give less than maximum performance in order to come out even on the job. A contractor may give maximum performance on his contract or he may

give medium performance and get by, or he may even give minimum performance and get away with it. An irresponsible contractor cannot be expected to give maximum or even medium performance. The irresponsible bidder may fail on the job, involving the community in delays and possible law suits. Or, lacking the necessary equipment, experience, financial resources, he may involve others in his unfortunate contract, or if not a man of integrity, he may seek a way out by "robbing the job" skimping on materials here and there and producing a poor road, or he may abandon the work altogether.

The one real criterion of the road is what service has it given, how has it stood up for the cost. This is also, in part, a criterion of the responsible bidder. But he must have experience nowadays in addition to his existing financial ability and equipment, and a reputation for integrity.

And in this way, it is believed, the country will get best value in the billions to be expended on roads.—Maine Motorist.

ENGINEERING QUALIFICATIONS

Recently in addressing the Engineering Association of Nashville, Professor Fred J. Lewis of the Vanderbilt School of Engineering said that the teaching staff endeavored to plant in the mind of each student that an engineer:

1. Must be gifted with imagination.
2. Must be inherently honest with himself and his fellowmen.
3. Must possess a sense of balance.
4. Must possess a logical mind which arrives at conclusions without prejudice.
5. Must possess good judgment and common sense.
6. Must think accurately.
7. Must possess initiative; and
8. Must be physically and mentally courageous.

These ideals would be fine distinguishing characteristics of a man in any walk of life but they are probably most necessary for the engineer, and most successful engineers are known to possess at least the majority of them. But how many we know that upon leaving college also leave behind them their ideals. It would probably be well for any of us who are engineers to think over these eight characteristics of an engineer to see to what extent we measure up.—Tennessee Road Builder.

"Said the Little Red Rooster"

Said the little red rooster: "Gosh all hemlock. Things are tough.

Seems that worms are getting scarcer, and I cannot find enough.

What's become of all those fat ones is a mystery to me; There were thousands through the rainy spell—but now where can they be?"

The old black hen who heard him didn't grumble or complain.

She had gone through lots of dry spells; she had lived through floods of rain.

So she flew up on the grindstone, and she gave her claws a whet,

As she said: "I've never seen the time when there were no worms to get."

She picked a new and undug spot; the earth was hard and firm,

The little rooster jeered: "New ground. That's no place for a worm."

The old black hen just spread her feet, she dug both fast and free.

"I must go to the worms," she said, "the worms won't come to me."

The rooster vainly spent his day, through habit, by the ways

Where fat, round worms had passed in squads back in the rainy days.

When nightfall found him supperless, he growled in accents rough:

"I'm hungry as a fowl can be. Conditions sure ARE tough."

He then turned to the old black hen and said: "It's worse with you,

For you're not only hungry, but you must be tired, too.

I rested while I watched for worms, so I feel fairly perk;

But how are you? Without worms, too? And after all that work?"

The old black hen hopped to her perch and dropped her eyes to sleep,

And murmured in a drowsy tone: "Young man, hear this and weep,

I'm full of worms and happy, for I've dined both long and well.

The worms are there as always—but I had to dig like H——."

Oh, here and there red roosters still are holding sales positions,

But they cannot do much business NOW because of poor conditions.

Soon as things get right again, they'll sell a hundred firms—

Meanwhile the old black hens are out and gobbling up the "worms." —Kalman Klippings.

The official delegation representing France and her colonial possessions at the Sixth International Road Congress, Washington, October 6-11, will consist of 36 members.

President Hoover and his cabinet are members of the honorary committee which is making preparations for the Sixth International Road Congress in Washington.

Governmental studies indicate that it costs an average automobile approximately 2.06 cents more per mile to drive on an earth road than on a hard-surfaced road.

There will be four official languages used at the Sixth International Road Congress, Washington, October 6 to 11. They are French, German, English and Spanish.

The question of financing roads and highways will be one of the most important to be discussed at the Sixth International Road Congress, Washington, October 6-11.

Old Gentleman (at swimming pool): "I say, attendant, what is about the longest a person has stayed under water?"

Attendant: "Oh, about five minutes, sir."

Old Gentleman: "Well, there's a man over there who's easily broken the record. I've been timing him, and he's been down seven minutes now."—Pearson's.

Very Late

A man bought a large mantel clock, one of the kind that strikes the hours and half hours.

One night he was awakened by the striking of the clock. Something had gone wrong with the mechanism and the chimes instead of stopping with the usual 12, kept right on sounding. The farmer counted them, and got up to 102. Then he awakened his wife:

"Mary, get up! It's later than I've ever known it to be before!"—Kreolite News.

Status of Construction

THROUGH MAY 31ST, 1930.

| Proj. No. | Contractor | Road No. | County | Total Length Miles | Clearing Miles | Grading Miles | Base Miles | Surface Miles | Type | Per Cent Complete | | |
|---------------------------------|------------------------------|----------|-----------------|--------------------|----------------|---------------|------------|---------------|------------|-------------------|-------|----------|
| 40-B | L. M. Gray | 4 | Broward | .31 | | | 0.00 | 0.00 | R.B.S.T. | 50.00 | | |
| 62-A | L. B. McLeod Const. Co. | 24 | Osceola | 6.32 | | | 6.32 | 5.00 | R.B.S.T. | 80.00 | | |
| 62-C | L. B. McLeod Const. Co. | 24 | Osceola | 12.09 | | | 12.09 | 3.00 | R.B.S.T. | 90.00 | | |
| 63-A | Morgan-Hill Paving Co. | 4 | Palm Beach | 9.21 | | | | 7.25 | Concrete | 60.00 | | |
| 63-C | Robert G. Lassiter & Co. | 4 | Broward | 13.24 | | | | 0.00 | Concrete | 10.00 | | |
| 64-A | H. E. Wolfe Const. Co., Inc. | 17 | Hillsborough | 9.61 | | | | 9.61 | Concrete | 98.00 | | |
| 65 | C. C. Moore Const. Co. | 5 | Hillsborough | .30 | | | .15 | 0.00 | R.B.S.T. | 70.00 | | |
| 68-A | S. P. Snyder & Son | 4 | Broward | .37 | | | 0.00 | 0.00 | R.B.S.T. | 35.00 | | |
| 73-A | Wm. P. McDonald Const. Co. | 17 | Polk | 3.66 | | | 1.00 | 0.00 | Mac. Asp. | 21.00 | | |
| 74 | Manly Const Co. | 2 | Orange | 14.34 | | | 3.00 | 0.00 | Bit. Conc. | 11.00 | | |
| 500-B | Marianna Lime Products Co. | 20 | Bay | 12.65 | | | 0.00 | 0.00 | R.B.S.T. | 0.00 | | |
| 500-C | Marianna Lime Products Co. | 20 | Bay | 12.19 | | | 0.00 | 0.00 | R.B.S.T. | 0.00 | | |
| 515 | Marianna Lime Products Co. | 20 | Jackson | 4.59 | | | 0.00 | 0.00 | R.B.S.T. | 0.00 | | |
| 587-B | Duval Engr. & Contr. Co. | 5-A | Suwannee | .34 | | | 0.00 | 0.00 | R.B.S.T. | 37.00 | | |
| 698 | H. E. Wolfe Const. Co., Inc. | 19 | Leon | 12.45 | | | | 2.58 | Concrete | 21.00 | | |
| 706-A | T. B. Gillespie, Inc. | 28 | Clay-Putnam | 10.83 | | | 10.83 | 2.00 | R.B.S.T. | 85.00 | | |
| 713 | State Convict Forces | 28 | Columbia | 10.00 | | | 7.21 | 0.00 | R.B.S.T. | 60.00 | | |
| 721-B | L. M. Gray | 3 | Putnam | .25 | | | 0.00 | 0.00 | R.B.S.T. | 47.00 | | |
| 750 | L. M. Gray | 14 | Gilchrist | 12.26 | | | 0.00 | 0.00 | R.B.S.T. | 0.00 | | |
| 756 | State Convict Forces | 19 | Marion | 11.89 | | | 11.56 | 8.30 | R.B.S.T. | 90.00 | | |
| 758 | A. E. Campbell | 2 | Polk | .10 | | | .10 | 0.00 | R.B.S.T. | 75.00 | | |
| 769 | Fred D. Beasley, Inc. | 5 | Lee | 1.89 | | | 0.00 | 0.00 | R.B.S.T. | 0.00 | | |
| 787 | State Convict Forces | 10 | Walton | 16.27 | 16.27 | 12.92 | | | Graded | 65.00 | | |
| 788 | W. J. Bryson Paving Co. | 10 | Walton | 17.50 | 17.50 | 17.50 | | | Graded | 100.00 | | |
| 798 | State Convict Forces | 13 | Nassau | 15.03 | 10.48 | 8.25 | | | Graded | 55.00 | | |
| 801 | State Convict Forces | 48 | Bradford-Union | 11.78 | 2.00 | 2.00 | | | Graded | 12.00 | | |
| 805 | State Convict Forces | 25 | Hendry | 9.42 | 2.00 | .20 | | | Graded | 5.00 | | |
| 820 | H. D. Spangler & Co. | 96 | Jefferson | 9.45 | 8.03 | 3.24 | | | Graded | 42.00 | | |
| 821 | H. D. Spangler & Co. | 96 | Jefferson | 5.18 | 5.18 | 5.08 | | | Graded | 98.00 | | |
| 825 | State Convict Forces | 88 | Holmes | 10.37 | .60 | .50 | | | Graded | 3.00 | | |
| 831 | State Convict Forces | 115 | Bay | 7.16 | 1.30 | 1.00 | | | Graded | 5.00 | | |
| 832 | State Convict Forces | 10 | Santa Rosa | 16.01 | 13.00 | 12.42 | | | Graded | 85.00 | | |
| 833 | State Convict Forces | 10 | Santa Rosa | 8.02 | 7.25 | 4.35 | | | Graded | 30.00 | | |
| 835 | Manly Const. Co. | 5 | Marion-Citrus | .15 | | | .15 | 0.00 | R.B.S.T. | 90.00 | | |
| 841 | State Convict Forces | 115 | Walton | 6.44 | 5.35 | 3.38 | | | Graded | 54.00 | | |
| 845 | State Convict Forces | 19 | Taylor | 8.57 | 8.57 | 8.57 | | | Graded | 99.00 | | |
| 846 | State Convict Forces | 19 | Taylor | 11.00 | 9.35 | 8.97 | | | Graded | 70.00 | | |
| 854 | G. W. Byrd | 60 | Walton | 9.81 | 9.81 | 9.81 | | 9.20 | Sand-Clay | 98.00 | | |
| 868-C | State Convict Forces | 5 | Levy | 12.34 | 3.00 | 1.00 | | | Graded | 8.00 | | |
| 870 | S. J. Groves & Sons | 143 | Palm Beach | 10.83 | 3.30 | 2.80 | 0.00 | 0.00 | R.B.S.T. | 8.00 | | |
| 876 | State Convict Forces | 78 | Duval-St. Johns | 28.90 | 18.00 | 17.00 | | | Graded | 60.00 | | |
| 876-A | Standard Dredging Co. | 78 | Duval-St. Johns | 8.00 | | | 2.00 | 0.00 | Shell | 20.00 | | |
| 878 | State Convict Forces | 77 | Gilchrist | 12.00 | 5.25 | 3.25 | | | Graded | 20.00 | | |
| Total complete May 31st, 1930 | | | | | 3,021.55 | 2,986.66 | 1,584.38 | 2,408.62 | | | | |
| Complete month of May | | | | | 10.55 | 13.76 | 10.97 | 17.33 | | | | |
| Total complete April 30th, 1930 | | | | | 3,011.00 | 2,972.90 | 1,573.41 | 2,391.29 | | | | |
| TOTAL MILEAGE COMPLETE | | | | | | | | | | | | |
| | Concrete | Brick | B.C. | S.A. | B.M. | Asph.B. | R.B.S.T. | S.C.S.T. | S.C. | Asph. | Marl | Total |
| Complete to April 30, 1930 | 348.83 | 17.13 | 39.73 | 114.75 | 109.57 | 23.70 | 1,321.52 | 290.54 | 204.26 | 0.00 | 27.58 | 2,497.63 |
| Complete month of May | 4.96 | | 1.58 | | | | 10.31 | | .77 | .77 | | 18.39 |
| Complete to May 31, 1930 | 353.79 | 17.13 | 41.31 | 114.75 | 109.57 | 23.70 | 1,331.83 | 290.54 | 205.03 | .77 | 27.58 | 2,516.02 |

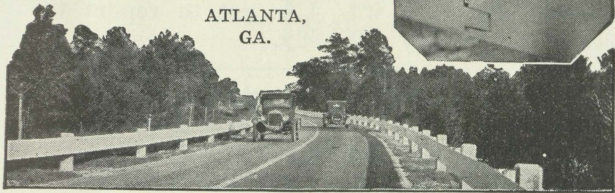
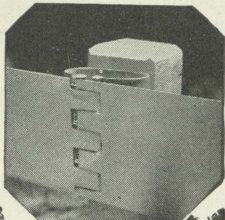
SMOOTH RESILIENT STRONG

With its interlocking spring connection holding the broad smooth rail six inches from the post, and with the resiliency of the rail itself, the Resiliflex Road Guard has the ability to withstand tremendous shocks with the least possibility of damage to motorists, vehicles or the rail itself. Write for literature.

RESILIFLEX
TRADE MARK
ROAD GUARD

NATIONAL TRAFFIC GUARD CO.

ATLANTA,
GA.

**Who Says This?**

"What are the first words of the used-car buyer?" asks an advertisement. Those we ride with always say, "You'll have to slam that door harder."

Try This On Your Honor

The Judge (sternly): "Well, what's your alibi for speeding sixty miles an hour through the residence section?"

The Victim: "I had just heard, your honor, that the ladies of my wife's church were giving a rummage sale and I was hurrying home to save my other pair of pants."

Eight men were once wrecked on a desert island. A year later a ship picked them up. The skipper of the ship noted in his log that:

"The two Irishmen had fought each other twice a day during the whole year.

"The two Scotchmen had founded a Caledonian society.

"The two Englishmen had not spoken because they had never been introduced.

"The two Americans had opened a real estate agency in a palm-leaf hut, with a Kiwanis club, a boosters' league and hootch-making plant in the cellar."—The Kablegram.

City Lad: "Say, dad, how many kinds of milk are there?"

Father: "Well, there's evaporated milk, butter-milk, malted milk, and—but why do you want to know?"

City Lad: "Oh, I'm drawing a picture of a cow, and I want to know how many spigots to put on her."—"Nebraska's Own Magazine."

50-50

"Half the City Council Are Crooks," was the glaring headline.

A retraction in full was demanded of the editor under penalty of arrest.

Next afternoon the headlines read: "Half the City Council Aren't Crooks."—Kreolite News.

Mother: "Why don't you wear that beautiful underwear you got for Christmas?"

Daughter: "Oh, I'm saving that for a windy day."—Williams Purple Cow.

PRINTING

Every printing need for the road builder, economically produced. Accuracy, quality and quick action have made for this firm an enviable reputation.

APPLEYARD'S

Foremost Printers of Florida

Tallahassee, Florida

There's a lot of good scenery to be admired this year, if you are lucky enough to find a billboard with a knothole in it.—Judge.

Milligan: "If I be after lavin' security equal to what I take away, will yez trust me till next week?"

Grocer: "Certainly."

Milligan: "Will, thin, sell me two av thim hams, an' kape wan av thim till I come again."

An old man went to a rejuvenation specialist and asked how much it would cost to rejuvenate him.

"To make you feel like 30 again, it will cost you \$1,000," said the surgeon, "but to make you look like 25 again will cost \$2,000 and anything below that age will be \$5,000."

"I don't care about the cost; just make me 18 again," said the oldster.

The operation was a success. But when the surgeon sent in his bill, the rejuvenated one sent it back with this notation:

"You can't collect from a minor!"

Special Rep.: "You say you are from Brooklyn? That would make you a Brooklynite, wouldn't it? By the way, may I have another of those cigarettes?"

Also: "Certainly, and you say you are from Paris?"

Tough World

A little girl said to her mother: "Mamma, if I grow up and get married, will I have a husband like father?"

"I don't know, dear. Very probably you will."

"And if I grow up and don't get married, will I be an old maid like Aunt Mary?"

"Perhaps," answered the mother.

The little girl thought it over for a moment.

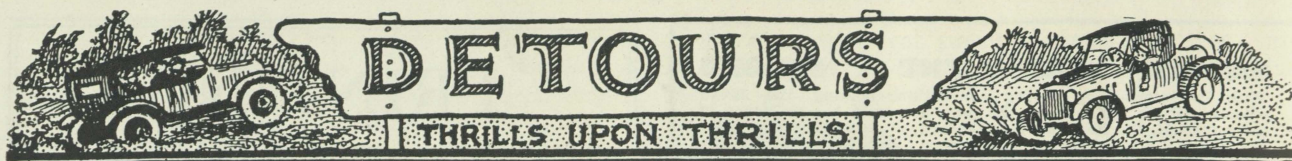
"Mother," she said, "it's a tough world for us women, isn't it?"—Junior Safety Special.

Oh!

He—"Now that we are married, perhaps I might venture to point out a few of your little defects."

She—"Don't bother, dear, I am quite aware of them. It was those little defects that prevented me from getting a much better man than you are."—Spotlight.

Epitaph for a dead cat in a lane-way? Sans purr, but not sans reproche.—Dublin Opinion.



Once there was a Sultan,
He was big and strong,
And fifty wives adored him
And never thought of wrong.

But one day, sad to tell you,
While the Sultan was away,
The Sultan's insultin' iceman
Stole all the wives away.
—Judge.

Knows Pop

Teacher: "Johnny, if your father earned \$40 a week and gave your mother half, what would she have?"

Johnny: "Heart failure."—Washington Dirge.

Cash Wanted

Judge: "You can take your choice, \$10 or ten days."

Prisoner (still in a foggy condition): "I'll take (hic) the money, y'r honor."

Why He Asked

A ten-year-old youngster, hatless, coatless, barefooted, and obviously bound for no place except where he was at the moment, had been hovering around the railroad depot for an hour or more. Again he approached the station agent.

"Mister," he said, "what time does the next train leave for Centerville?"

The agent turned an exasperated look at the lad.

"Listen," he said. "I've told you five times that it leaves at 4.44. Stop pestering me. Besides, you're not going there, anyway."

"I know it," the youth replied. "But I like to see your whiskers wiggle when you say 4.44."

The First Slogan

History Professor: "And when Lord Chesterfield saw that death was near he called his friends around him, and just before he breathed his last he uttered these immortal words. Who can tell me what those words were?"

Class (in unison): "They satisfy"—Fo'c'stle Banter.

Fooling Papa

Little Boy (calling father at office): "Hello, who is this?"

Father (recognizing son's voice): "The smartest man in the world."

Little Boy: "Pardon me, I got the wrong number."—Portland Adv. Spotlight.

The heavyweight boxer was describing his latest fight.

"Yes," he said, "my opponent had to be taken to the hospital with a broken nose, both eyes blacked, a twisted shoulder-blade, and a fractured jaw."

"Oh," exclaimed a friend interested, "did he have a row with the referee?"—Tit-Bits.

Doctor: "To be quite candid with you, your only trouble is laziness."

Patient: "Yes, doctor, I know. But what's the scientific name for it? I've got to report to the wife."—Everybody's Weekly.

Military Courtesy

Mrs. Dash wished to show kindness to Captain Blank, so sent him this invitation:

"Mrs. Dash requests the pleasure of Captain Blank's company at a reception on Friday evening."

A prompt reply came:

"With the exception of three men, who, unfortunately, are suffering with measles, Captain Blank's company accepts your kind invitation and will come with pleasure to your reception on Friday evening."—Fyr-Fyter News.

Free and Baptized

"What is your religion?" the recruit was asked.

Promptly and smartly came the answer, "Militia, sir."

"No, no, I said 'religion'."

"Oh, 'religion,' sir. I beg your pardon. I'm a plumber."—Boston Transcript.

Southern Florida is shipping papayas north, but probably they will not sell much until northern mammayas get used to them.—Boston Transcript.

Rough Going

A dub golfer had been batting the ball around the rough half the day and the rough seemed to be getting rougher and rougher. At last, in the midst of the worst piece of going he had yet encountered, he looked up from addressing his two hundred and sixty-fourth stroke and said disgustedly to the caddy:

"These are the worst links I ever saw in my life."

"These ain't the links, sir," returned the youth. "This is the stone quarry. You left the links two hours ago."

Willie: "Say, Pa, didn't Edison make the first talking machine?"

Pa: "No, my son. God made the first one, but Edison made the first one that could be shut off."—Ad Printer.

"No person shall use any blasphemous or indecent language on a highway," says the Manitoba's new traffic act. And what do you say to a flat tire—baby talk?

College Lad (arrested for speeding): "But, your honor, I am a college boy."

Judge: "Ignorance doesn't excuse anybody."—Troubadour.

Tame Volcano

The He: "What is this thing called Love?"

The She: "The tenth word in a telegram."—Boulevardier.

Pensacola Creosoting Company, Inc.

PENSACOLA, FLORIDA

Specializing in the manufacture and
treatment of the following Forest
Products

PILING - CROSS TIES - POLES
CROSS ARMS - CONDUITS - LUM-
BER and STRUCTURAL TIMBERS

Your inquiries solicited—Cost estimates gladly
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FOR MANY YEARS DUDLEY PRODUCTS
HAVE BEEN SUCCESSFULLY USED
IN FLORIDA CONSTRUCTION

REINFORCING BARS FOR CONCRETE
BRIDGES AND PAVEMENTS

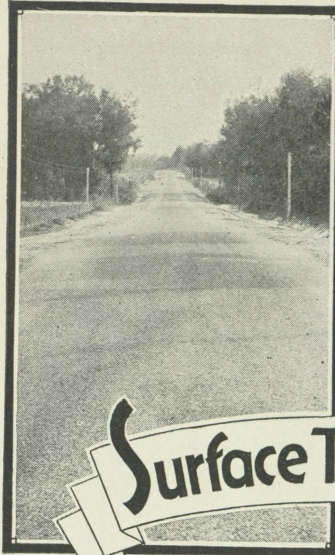
METAL CENTER JOINTS; PRE-MOULDED
ASPHALT JOINTS; ASPHALT BRIDGE
PLANKING; BOLTS; BEARING
PLATES, ETC.

HOTCHKISS DEFLECTING PLATE GUARD
RAIL MESH. PAINTED OR PLAIN
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Dudley Bar Company

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SOLD THROUGH
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Sales Agent
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Dixie Highway on State
Road No. 2 in Marion
County: 38 miles Slag
Surface Treatment on
limerock base: laid 1924
by Florida State Road
Department.



Surface Treatment

"The strength of this type of bituminous macadam depends more on an interlocking of the aggregate particles than on the density of the mixture," says a well known highway engineer.

Non-Skid Florida's state and county engineers know how true that is. Since 1921 they have used "Ensley Basic Slag" in more than 2300 miles of Surface Treatment and they know these roads are *non-skid safe at all speeds . . . easy riding . . . non-glaring . . .* and that year in and year out they carry a surprising volume of heavy traffic.

Better Bond And this is due primarily to that interlocking of the aggregate particles . . . that perfect mechanical bond between asphalt and the coarse, angular, pitted surface of "Ensley Basic Slag" that prevents displacement and adds stability and strength to the pavement.

15% of the total tonnage of commercial slag is used to build and maintain bituminous highways. In New York the highway department specifies nothing but SLAG CHIPS for Surface Treatment work. Will Florida in the face of this evidence . . . and her own experience . . . refuse to include slag in her specifications?

BIRMINGHAM SLAG CO.

Atlanta BIRMINGHAM Montgomery
Thomasville Orlando, Fla.

—to protect your streets and highways this winter
 —to save expensive spring repairs



ABOVE—Patching holes with Tarmac Cold Mix, Youngstown, Ohio

BELOW—Filling cracks with Tarmac HP



Use Tarmac now

- 1—Patch holes with Tarmac.
- 2—Fill cracks with Tarmac.
- 3—Seal pavements with Tarmac surface treatments.

Tarmac's "tacky", adhesive nature and its ability to penetrate and stick to old surfaces makes it a widely-used material for repairing and protecting street and highway surfaces against the extreme conditions of winter.

Booklets giving detailed instructions on the use of Tarmac for "before-winter" maintenance will be sent on request.

AMERICAN TAR PRODUCTS COMPANY

Division of The Koppers Company

GENERAL OFFICES: PITTSBURGH, PA.

New England Division: Tar Products Corporation, Providence, R. I.

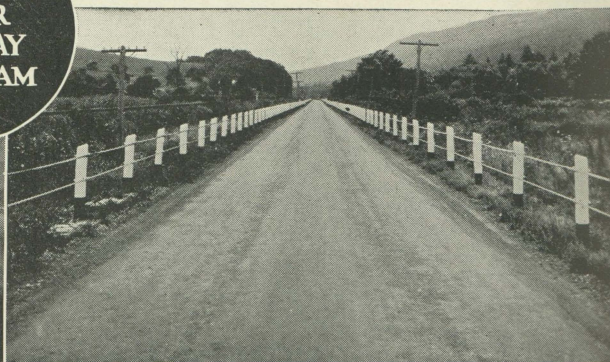
Birmingham Office: 814 Woodward Building

**BALANCE
YOUR
HIGHWAY
PROGRAM**

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Applying a surface treatment of Tarmac in Bristol, Connecticut.

Patching with Tarmac Cold Mix in mid-winter at Pittsburgh, Pa.



A Pennsylvania road surface-treated with Tarmac

Florida Representative: **M. D. MOODY**
 402 Masonic Temple, Jacksonville, Florida.